THE JOURNAL OF LAND & PUBLIC UTILITY ECONOMICS

Federal Control of Electric Power
FRANK R. McNINCH

Financing Low-Rent Housing in Germany
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Domestic Gas Consumption
W. J. CROWLEY and H. S. JACOBS

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CONTENTS — MAY, 1936

The Evolution of Federal Control of Electric Power . . FRANK R. McNINCH 111
Financing Low-Rent Housing in Germany . . . . . JULIUS FLEISCHMANN 120
Consumption Characteristics of Domestic Gas Customers . . . . . W. J. CROWLEY and H. S. JACOBS . 126
The Limit of Economic Justification for Flood Protection . . . . . GILBERT F. WHITE 133
Recent Trends in Utility Appliance Merchandising . . . RICHARD A. HARVILL 149
Removing the Obstacles to Group Rehabilitation of Real Properties . . . . . ARTHUR C. HOLDEN 161
Simplifying the Solution of Economic Problems Relating to Immediate versus Deferred Investment . NEWTON O. BURNETT 169
Supplementary Farming Homesteads in Recent German Land Settlement . . . . . ERICH KRAEMER 177

DEPARTMENTS

Urban Land
Guaranteed Certificated Mortgages in New York . JOHN E. BURTON 191
Judicial Sanction of Public Housing by the New York Court of Appeals . . . . . DANIEL M. SCHUYLER 193
The Record of Long-Term Real Estate Securities: by Cities of Issue . . . . . ERNEST A. JOHNSON 195
How to Make a Real Property Survey . . . . . CARRIE MAUDE JONES 197
Land Resources
The AAA Decision and the Soil Conservation Act . . . . . CHARLES BUNN 199
Changes in Farms and Farm Tenure, 1930-1935 . . GEORGE S. WEHRWEIN 200
Planning and Zoning in the State of Washington . JOHN BLACKMORE 205
Public Utilities
The T. V. A. Decision of the United States Supreme Court . . . . . MARTIN G. GLAESER 207
Public Utility Financing in the First Quarter of 1936 . . . . . E. D. OSTRANDER 209
The Boonville Case . . . . . WALTER E. CAINE 211
Municipal Utility Profits or Taxes? . . . . . HOWARD K. HYDE 212
A Correction . . . . . RICHARD A. HARVILL 215
Book Reviews 216

PUBLISHED QUARTERLY BY NORTHWESTERN UNIVERSITY

Publication offices: 121 South Pinckney Street, Madison, Wis.

Editorial and General offices: Northwestern University, School of Commerce, 337 East Chicago Ave., Chicago, Ill.

The contents of the *Journal* are indexed in the *Industrial Arts Index*.

Entered as second-class matter, January 5, 1925, at the post-office at Madison, Wis., under the Act of Congress of March 3, 1879. Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3, 1917, authorized October 12, 1922. Printed in the United States of America.

Subscription Rates: $5 a year; $1.25 a copy. Remittances may be made by personal checks, drafts, post-office or express money orders, payable to the Journal of Land & Public Utility Economics.

Agents of the *Journal* in Great Britain, B. F. Stevens & Brown, Ltd., 28-30 Little Russell St., British Museum, London, W.C. 1.

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NORTHWESTERN UNIVERSITY PRESS

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MAY
1936

VOLUME XII
NUMBER 2

The Evolution of Federal Control of Electric Power

By FRANK R. McNINCH*

FEDERAL control or regulation of electric power was not suddenly created but has been, instead, a natural growth, a legislative evolution, to meet changing conditions. It is true that the orderly growth of this regulatory power has been retarded at times by anti-social influences, but with its roots springing from the public resources used, the monopolistic character of the business, the public nature of the service, it was inevitable that increasing measures of control should be developed to make the power industry responsive to the social, economic, and political development of the Nation.

The historic opposition of power interests to advancing federal and state control has apparently been based upon an utterly erroneous conception of what the power industry is. Forty years ago they spoke of "a private power business," and today they still speak of the "rights of the private power industry." Such a misconception of the true nature of this vital industry may easily account for the unreasoning opposition to increasing measures of public regulation. But the public and the Congress understand the true status of the industry. They know it is in fact and in law a public utility engaged in rendering a necessary public service. Because the power business is not private but public it lawfully enjoys special privileges from state and nation, is recognized as a practical monopoly and has a protected market, has delegated to it the sovereign power of eminent domain by which it takes private property for public service, and is given the special privilege of using public streets and highways. By its very nature and characteristics the business of generating, transmitting, and selling electric energy is indelibly impressed with a public character.

The fact that all or a part of the money invested in these public utilities

*Chairman, Federal Power Commission.

Editorial Note: This article is in substance the lecture presented by Mr. McNinch at Northwestern University on March 31, 1936 on the William A. Vawter Foundation.

is privately owned capital does not and cannot transform the character of the industry. On the contrary, the property purchased with private funds for public utility purposes is thereby dedicated to the public service, and the owners and managers of these utilities are both morally and legally trustees of the public. Long ago the Supreme Court of the United States in the Moffat Tunnel case declared that "no matter who is the agent, the function performed is that of the state. Although the ownership is private, the use is public."[1]

The Period from 1890 to 1920

Prior to 1890, in which year the first hydro-electric plant in America was completed, Congress had allowed the states undisputed control over the waters within their respective boundaries. But in the Rivers and Harbors Act of that year[2] the Congress prohibited the creation of any obstruction, not affirmatively authorized by law, to the navigable capacity of any waters under jurisdiction of the United States. This meant that every dam had to be specifically authorized by the Congress. By this act the Congress gave notice to the states that thenceforth it proposed to assert its jurisdiction in this important field. In 1899 the control which Congress had established in 1890 was enlarged and extended.[3]

A parallel problem to that of federal control of navigable waters was the control which should be exercised over our great public domain in the West, which embraced enormous potential water-power development. Prior to 1896 lands were patented by the Federal Government without regard for water-power possibilities. In this way many of the best power sites were practically given away into private ownership.

In 1896 the Congress authorized the Secretary of the Interior to permit the use of rights-of-way not exceeding 40 acres on public lands and forest reservations for power purposes,[4] and in 1901 this authority was further defined and such permits were made revocable.[5]

The whole issue of the power of Federal Government to control this rapidly growing industry became acute about 1905, and for the next 15 years continued to be one of the most vexatious and vital problems of the Government. Those who sought to restrict or defeat federal control urged that the only power Congress has with respect to our navigable streams is to protect and promote their navigability; that Congress has no rights in potential water-power developments; that the rivers are the property of the several states through which they flow, and of the riparian owners; and that, hence, the Congress has no right to charge tolls or license fees for use of navigable waters for power purposes nor to exercise any control except in protection of navigation.

In vetoing the Rainy River Bill in 1908, President Theodore Roosevelt, in his message to Congress, brought vividly to the attention of the people the fact that the country was threatened by a monopoly far more powerful, because in closer touch with our domestic life, than any theretofore known. This message is one of the great national landmarks for conservation of our water-power resources and for their development under federal control and regulation. In this message, President Roosevelt criticized the Act of 1906 for many vital omissions:

[1] *Wilheim v. Moffat Tunnel Dist.*, 262 U. S. 710 at 719 (1923).

[2] Act of 1890 (26 Stat. 454).

[3] Act of 1899 (30 Stat. 1151).

[4] Act of May 14, 1896 (29 Stat. 120).

[5] Act of 1901 (31 Stat. 790).

"A definite time limit is one of these important omissions. Each license should be issued to expire on a specified date without further legislative, administrative or judicial action. Every permit to construct a dam on a navigable stream should specifically recognize the right of the government to fix a term for its duration and to impose such charge or charges as may be deemed necessary to protect the present and future interests of the United States.

"This natural wealth [water powers] is the heritage of the people . . . We are at the beginning of a great development in water power. Its use in electrical transmission is entering more and more largely into every element of the daily life of the people. Already the evils of monopoly are becoming manifest."[6]

In 1909 the Congress passed a bill authorizing construction of a dam across the James River in Missouri, and President Roosevelt vetoed that bill. In his veto message he laid down in considerable detail specific conditions which every water-power grant should embody, including a reasonably limited opportunity to develop a project, the right to annul the grant if the project were not built within a reasonable time, a requirement for maximum development, license fees adjusted to profits, and a maximum license period of 50 years. With his characteristic forthrightness he said:

"The great corporations are acting with foresight, singleness of purpose and vigor to control the water powers of the country. They pay no attention to state boundaries and are not interested in the constitutional law affecting navigable streams except as it affords what has been aptly called a 'twilight zone' from any regulation. . . . I esteem it my duty to use every endeavor to prevent the growing monopoly, the most threatening that has ever appeared, from being fastened on the people of this nation."[7]

Under his leadership the forces of public conservation and control won their first significant victory. The power interests withdrew from further contest, awaiting a more favorable season to renew their efforts for legislation which would permit further encroachment upon the public power resources with a minimum of federal control and a maximum of private profit.

In 1912 the Congress passed a bill authorizing erection of a dam on the Coosa River by the Alabama Power Company. President Taft vetoed this bill because it lacked regulatory provisions and did not assess any charge or fees against the power company for use of this navigable stream. In his veto message he said:

"If the Federal Government chose to build this dam itself in aid of navigation, its right to the water power incidentally created would be beyond question. When, instead of building the dam itself, it builds the dam by an agent, as proposed by this bill, I believe it to be equally clear that the dam and all its incidents, including the water power created, is within the regulative power of the Federal Government in respect to navigation. . . . "[8]

This veto was a second serious setback to those who looked with envious eyes upon the potential wealth in the nation's water power. The power industry being unwilling to submit to regulatory measures, the development of water power on navigable streams was practically abandoned from the time of this veto in 1912 to the enactment of the Federal Water Power Act in 1920.

During this same period an organized effort was made by certain groups from the West to open up the public domain to private entry and development. The Federal Government was criticized for withholding vast areas of the public domain. Western states felt that they

[6] *Congressional Record*, 60th Cong., 1st Sess., pp. 4698-4699.

[7] House Doc. 1350, 60th Cong., 2nd Sess.

[8] Senate Doc. 949, 62nd Cong., 2nd Sess.

had a grievance in that much of the lands within their boundaries were held free from their power to tax or develop. Seeking to capitalize this view, which was rather generally held in the West, and appealing also to the South, public sentiment being strong for development of the vast resources of these regions, emissaries of the power interests asserted that development of the water power in the public domain and in the navigable streams would not be undertaken, and the development of these great sections of our country would be retarded, if restrictions and regulations were prescribed for development of these water powers. Eastern capitalists, still bent on further exploitation of these public resources, raised the false alarm of states' rights and appealed to the traditions of democratic freedom by demagogic denunciation of a federal bureaucracy. They painted an ugly picture of a huge, ruthless, overpowering federal juggernaut which would bear down on and crush local initiative and enterprise. They pictured the states as being stripped of their reserved powers and prophesied rapid defacement of state lines. Although these alarming arguments were made more than a generation ago, they have a familiar ring and form the basis of the attack today upon the power policies of Congress and the National Administration.

But if the constitutional case against the program of the conservationists of the 1890's and in the early 1900's was vigorously assailed, it was with equal vigor and greater ability defended by those who were determined to preserve our great sources of water power for future generations. On the floor of the Senate such giants as John Sharp Williams of Mississippi and Elihu Root of New York raised their voices on behalf of the regulatory power of Congress. These leaders and many other statesmen, regardless of party affiliation, declared that the water power upon public lands and in navigable streams belonged to the people of the Nation and that Congress could and should regulate and dispose of it for the people's benefit. They asserted that if the Government of the United States had the right to build a dam in aid of navigation, it had the unquestioned right to the water power which was created by such dam—a doctrine which was reaffirmed only a few weeks ago by the Supreme Court of the United States in the notable Tennessee Valley Authority decision.[9] They further asserted that if, instead of building a dam itself, the Federal Government should designate a private power company to construct the navigation improvement, the water power incidentally created by such dam is within the full regulatory power of Congress with respect to navigation.

The Water Power Act of 1920

The 15-year battle of the conservationists to safeguard the Nation's water power came to a successful climax in 1920 when, under the courageous leadership of Woodrow Wilson, the Federal Water Power Act[10] became law. While this Act was under consideration by Congress, one of the most powerful lobbies ever known to Washington opposed its adoption and challenged its constitutionality. In this last drive to defeat a comprehensive regulatory act the records show the prophesy-mongers sadly foreseeing the paralysis of private initiative, the destruction of private industry, and a rapid decline into socialism and government ownership and operation of the whole industry.

[9] Decided February 17, 1936.

[10] Federal Water Power Act of June 10, 1920 (41 Stat. 1063).

The answer to the power Jeremiahs of 1920 and of the preceding decades is found in the fact that prior to 1920 only 1,430,000 horse power had been developed on public lands and navigable streams, while during the 15 years subsequent to enactment of the Federal Power Act, there has been developed by the industry water power in excess of 16,000,000 horse power, an annual development almost equal to the total preceding development.

This new statute established a national power policy under which our water power resources might be developed and operated by private interests, by states or municipalities, under license issued by the Federal Power Commission. The Act provided for a maximum license period of 50 years, for a reasonably limited period for construction to prevent "squatting" on public resources for speculative purposes, and for the regulation of rates, service, and securities of licensees where no state authority is exercised over these subjects. It further provided for a uniform system of accounting by licensees; for determination by the Commission of the actual legitimate cost of each power project to insure against capital-structure inflation; and for the assessment of fees to cover cost of administration of the Act and of reasonable compensation to the Government for use of Government lands and of federally constructed dams.

One of the most important provisions of the Act of 1920 is the right of recapture by the Government of these valuable resources as developed, upon the termination of the license, and for the taking over of the project property by the Government or by a state or municipality upon payment to the licensee of its net investment in such property or its value, if that be less. Thus was laid down a sound and secure basis upon which water-power development might go forward and which, instead of holding any discouragement of private initiative or threat to private capital, offered for the first time assured and full protection to all legitimate private investment. The Congress builded much more wisely and constructively than its critics knew, and those who were the most vigorous opponents of this legislation found under it shelter and protection for every legitimate right, and incentive to go forward with the most phenomenal development of water power in the whole history of the industry.

The Federal Power Act of 1935

The Federal Power Act of 1935[11] was born of this epochal development in the power industry to meet social needs and strike down uneconomic practices which had grown up during this period of rapid expansion. On March 12, 1935 President Franklin D. Roosevelt sent a bold and uncompromising message to Congress, recommending the enactment of legislation with respect to the great holding company systems, to prohibit admittedly evil practices incident thereto, such as the collection of exorbitant fees for services from their controlled operating companies, and otherwise greatly to extend federal control over this industry. This message marked the beginning of a titanic and ultimately successful battle for establishment of another and higher landmark of federal control.[12]

[11] Act of August 26, 1935 (49 Stat. 847).

[12] This was known as the Wheeler-Rayburn Bill, being by Senator Burton K. Wheeler, of Montana, and Representative Sam Rayburn, of Texas, Chairman of the Senate and House Committees on Interstate and Foreign Commerce, respectively. Never before had such a lobby swarmed the Capital as the one to fight this bill. For six months the war raged, but in August, 1935 the forces of the Administration were victorious.

When the State of Missouri, a decade and a half ago, challenged an act of Congress as an unconstitutional interference with the right of the states reserved by the Tenth Amendment, the Supreme Court said: "We must consider what this country has become in deciding what that amendment has reserved."[13] The Federal Power Act of 1935 is properly to be interpreted in the light of "what this country has become" in the field of electric power, not only in considering its constitutional validity but also in passing upon the wisdom of its policy.

Examination of the national power map reveals graphically what this country has "become" in the field of electric power as a result of the extraordinary development in the technical arts within the past two decades. It shows more than 160,000 miles of high-tension transmission lines spreading like a network across the political boundaries of sovereign states. More electricity flows in interstate commerce today than was generated in the entire United States in 1913. Electric energy has been taught by the genius of engineers, inventors, and scientific men to disregard the political boundaries of sovereign states.

Total generation in the United States in 1933 was in excess of 84 billion kw. hrs. of which 15 billion (18%) was transmitted interstate; whereas in 1928 only 10.7% of the power generated moved in interstate commerce. Further illustration of the proportions to which interstate transmission has grown is found in Table I.

The old isolated plant which once generated and distributed electric energy in the local community has, for the most part, been swallowed by the great interstate power systems. Distribution of electric energy to the factory, home, and farm is still local, but that is no longer generally true of generation and transmission. The local distributing system now oftentimes receives its supply of energy from huge generating plants in adjoining or distant states through transmission networks that cross the borders of one or many states.

Such was the picture unfolded before the Congress which in 1935 was considering this power problem. Here was a new industry which had pushed out into interstate commerce; an industry recently transformed from one of purely local character into one which was still local in some aspects but had now become regional and national in other important respects. Out of this change had come problems of vital social and economic concern, both to the states and to the Nation. States were no longer able adequately to regulate utilities

[13] Mr. Justice Holmes in *Missouri v. Holland*, 252 U. S. 416 (1920).

TABLE I. EXAMPLES OF INTERSTATE TRANSMISSION OF ELECTRICITY, 1933

State	Kw. Hrs. Generated (000,000 omitted)	Kw. Hrs. Exported		Kw. Hrs. Imported	
		Amount (000,000 omitted)	Percent of Total Generated	Amount (000,000 omitted)	Percent of Total Generated
Delaware	6	4	66.0%	133	2200.0%
Illinois	6,205	985	15.8	1,088	17.5
Indiana	2,446	1,045	42.7	423	17.3
Maryland	1,742	1,691	97.0	1,095	63.0
New Hampshire	585	342	59.0	.....	.....
Vermont	464	294	63.5	.....	.....

whose operations had expanded beyond their jurisdiction; and since Congress had provided no regulation, a gap had appeared in public regulation, a twilight zone in which interstate activities of profound significance to the public were carried on without the restraint of any public regulatory control.

Not many years ago a decision of the Supreme Court of the United States focussed attention upon this anomalous situation. A power company in Rhode Island sold part of its energy to Rhode Island consumers and the remainder to a Massachusetts company which distributed the energy locally in Massachusetts. The Rhode Island Commission concluded that consumers in that State were being burdened with unreasonably high rates because that company's wholesale rate to Massachusetts was unreasonably low and the difference had to be collected from Rhode Island consumers. The Commission ordered a new wholesale rate. In that widely known Attleboro case[14] the Supreme Court held that electric energy transmitted from Rhode Island to Massachusetts constituted interstate commerce. It further held that neither the sending State not the receiving State could control the wholesale rate of the energy which thus flowed in interstate commerce. The power, the Court said, belonged to Congress, and because Congress had not acted there existed a gap in public regulation; a field in which the interstate activities of the company involved were beyond any public control.

Congress, in the new Power Act, has closed this gap. The Federal Power Commission now has authority to investigate and fix reasonable interstate wholesale rates and to regulate interstate service and certain other interstate activities. Congress asserted jurisdiction over a subject with respect to which the states were without constitutional power. At the same time it has insured to states complete control over local distribution rates.

I now come to another provision of the new law which promises to become one of its most important provisions. It is a new departure in power regulation. It is based upon a fact not generally appreciated, yet a fact of tremendous importance. We have commonly regarded rate control as the primary objective of public regulation. The new Act, however, is predicated upon the proposition that rate control, in and of itself, is not sufficient to achieve an adequate supply of electric energy at the lowest economic cost; and that, while rate control is necessary, such control alone cannot accomplish the desired objective unless the power facilities and resources of the country are properly coordinated in a geographically and economically integrated power system.

To this end, the new Power Act contains provisions for an interconnected and coordinated power system "for the purpose," to use the language of the statute, "of assuring an abundant supply of electric energy throughout the United States with the greatest possible economy and with regard to the proper utilization and conservation of natural resources." The Federal Power Commission is directed to divide the country into the most economical regional power districts and to accomplish interconnection and coordination of power facilities and resources within those districts and between those districts. This policy is not to be primarily one of compulsion, but rather one of voluntary action by the companies themselves, supplemented by a compulsory power where this opportunity for voluntary action has not been

[14] *Public Utility Commission of Rhode Island v. Attleboro Steam & Electric Co.*, 273 U. S. 583 (1927).

exercised. It is the duty of the Commission to promote and encourage interconnection and coordination; and authority is given to issue a compulsory order to interconnect or furnish power only upon the petition of another power company or of a state public service commission, and then only upon evidence that such interconnection would be in the public interest.

These provisions for coordination of facilities and resources imply no destruction of private initiative nor impairment of capital invested, as some have feared; nor do they involve any unreasonable interference with the functions of private management. The Congress has merely recognized the power industry as a great national agency whose rightful duty is to render maximum service at minimum economic cost to the public.

The Philosophy behind the New Legislation

What moved Congress to assert this jurisdiction over the future power development?

Congress was very largely influenced in its action by evidence which was before it in various government reports issued since the world war. Those reports, recording studies made by leading engineers of private industry in cooperation with engineers of the Federal Government, told a story of a piecemeal power development which had laid an expensive burden upon the consuming public of the United States. They told of uneconomic division of territory, wasteful duplication of property, and lack of engineering and economic unity. The documentary evidence indicated clearly the great need for an interconnected and coordinated power system.

Congress was, no doubt, influenced also by its knowledge of what had happened in the field of railroad development; as it had repeatedly been told that the railroad industry was carrying its greatest burden in the enormous waste that accompanied its uncontrolled expansion, and that the most complete control of railroad rates had been unable to overcome the results of wasteful duplication of property. Congress in this Act seeks to save the power industry from the fate which had befallen the railroads under the policy of uncontrolled expansion.

Still another reason may have moved Congress to the adoption of this policy of coordination. A report prepared by distinguished engineers of the United States Army and published in 1921 by authority of the Secretary of War[15] tells in a dispassionate but impressive manner of the exhaustion of the supply of our electric reserves in our principal manufacturing centers soon after our entry into the world war. This report tells us how the war program of the United States was seriously threatened by the inability of our electric utilities at that time to supply the needs of our war industries which were producing equipment for our forces on land and on sea. That war did not come upon us unexpectedly; yet it found us without any available, dependable supply of the electric energy which was needed for national defense. It found us without any plan for the interconnection and coordination of our power resources and facilities to meet the national needs.

Now when Asia, politically, is resting upon a volcano which may erupt at any time, when peace in all Europe is threatened by national suspicions and grave controversies, this report, "The Power Situation During the War," deserves the serious consideration of thoughtful citizens.

[15] "The Power Situation During the War," by Col. Charles Keller, Corps of Engineers (Government Printing Office, 1921).

Congress, in the new Power Act, has willed that this situation shall not happen again. This Act is based upon the proposition that the interconnection and coordination of power resources and facilities are necessary to this nation's welfare in time of peace, and essential to its safety in time of war. The Federal Power Commission is required, as a part of its regular task, to investigate and keep current the facts and information concerning our power resources, facilities, and requirements, information such as was not available to the nation at the outbreak of the world war. The Act further gives the Commission authority to require temporary connections and to require the generation, transmission, and interchange of power in time of war or other national emergency; and it grants to the Commission control over the export of electric energy into foreign countries so that we may keep our electric energy at home if and when we need it.

The Federal Power Act of 1935 recognizes the vital stake which this nation has in the electric industry. It envisages an enterprise big with opportunity for the industry and the public alike. If the Federal Power Commission is given the wisdom to administer this new and far-reaching law soundly and with due regard to the economic and social factors involved, and if it is aided by the genuine and whole-hearted cooperation of the members of the industry, this law should bring real and substantial benefits to investors, consumers, and the general public alike.

Financing Low-Rent Housing in Germany

By JULIUS FLEISCHMANN*

Financing through Low-Interest Second Mortgages Raised by a Special Rent Tax

LOW-RENT housing without active governmental aid is an anomaly. Experience in European countries as well as in the United States has shown that families of small incomes cannot afford the commercial rent of dwellings which meet the minimum requirements of health and decency. Private financing alone at prevailing interest rates does not permit low rents either in European countries or in the United States. Any government anxious to raise the living standard of its people must encourage the construction of up-to-date, low-rent housing developments through financial support.

Germany solved the problem of financing low-rent housing as follows: After the war a shortage of hundreds of thousands of dwellings caused deplorable living conditions. Remedial measures on an extensive scale could not be undertaken until the end of inflation of the currency. When the Mark was stabilized in November, 1923 at the pre-war rate (1 gold dollar = 4.20 Marks; 1 new dollar = 2.50 Marks) capital for first mortgages was available only at interest rates of 10% in 1924, and at 8 and 7% in 1926 and 1927. Besides, the building cost index had climbed to about 170% above pre-war prices. Newly constructed dwellings would have called for a rent three to four times higher than pre-war rentals, if private financing had been at all possible.

During the inflationary period owners of buildings could pay off their mortgages. Revaluation of pre-war mortgages was set first at 15% and then at 25% of their original amount. Rentals have also been regulated by the government since 1916. In the early part of 1924, rentals of old buildings were 15 to 25% of the 1914 level, but they were gradually raised and reached the pre-war rates by July 1, 1926. These rentals would have given landlords an excessively high rate of return because most of the urban apartment houses were mortgaged to approximately 80% of their value. For example, a house which had carried a mortgage of 80,000 Marks at 4¼% in 1914 had a yearly interest charge of 3,400 Marks. In 1924, when the mortgage was reduced to 20,000 Marks, or even less, an interest charge of 5% amounted to 1,000 Marks. On the basis of pre-war rents (every house was completely occupied) the owner would receive a surplus of 2,400 Marks. Depending upon the proportion of pre-war mortgages to assessed pre-war building values, the surplus varied with the houses. A large part of this surplus was taken away from the landlords by the government as a special rent tax, which amounted to from 10 to 40% of pre-war rents. Buildings with a pre-war mortgage of 80% and more of their value had to pay 40%; even buildings with no pre-war mortgage had to pay 10% of pre-war rents as rent tax. Consideration, however, was given to increased cost of maintenance and repairs. About ½ of the rent-tax returns were allocated to the general expenditures of state and local governments and the other ½ formed

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a fund out of which second mortgages at very low interest rates were given to finance new housing.

From 1926 on, this special rent tax brought in yearly over 1,600 million Marks. About 800 millions were appropriated for housing, resulting in the yearly erection of approximately 200,000 dwellings. By the end of 1930, when the housing shortage had been relieved to a great extent, allowances for second mortgages were reduced to ⅕ of the former amount. This measure caused an almost complete cessation of building with an immense increase of unemployment in the building trades.

The German Federal rent-tax law left the individual states to determine methods of collection. Either a surtax on the existing property tax or a new tax in percentage of pre-war rents itself was used. The individual states were also at liberty to determine the distribution of the funds that were to be allocated for investment in second mortgages. In Prussia and Saxony the major part of the tax returns was distributed by municipalities and districts, while the rest was handed over to the state for redistribution to those localities which had an abnormally large demand for housing, such as in new industrial centers or where rural settlements were undertaken. Bavaria and Wurttemberg distributed the rent-tax returns independently of the yields in the local government units.

Generally, the distribution of housing loans was made by state or municipal agencies. In Wurttemberg and in Berlin a special Housing Loan Bank was established. Although these banking institutions were organized on a strictly business basis, political considerations were almost as influential as in the respective state and municipal agencies. The selection of projects, therefore, was not always made on the basis of merit.

The rate of interest of the second mortgages was generally 1% and the rate of amortization was 1%, making a fixed annual charge of 2% on the original amount of the loan. During the first five years the amortization was generally suspended and later payments were not required. The average amount of such a second mortgage was 4,000 Marks per dwelling.

The total cost per unit of 3 to 3½ rooms averaged 10,000 Marks. The owner's equity was supposed to be 10%. The balance was covered by a first mortgage; money for it was supplied by municipal savings banks, social insurance institutions, private and state owned mortgage banks. Private insurance companies did not participate to a great extent.

The rent was calculated as follows:

5,000 Marks first mortgage from private capital at 8% interest	400 Marks
4,000 Marks second mortgage from rent tax funds at 1% interest	40 Marks
1,000 Marks equity at 5% interest	50 Marks
10,000 Marks Total Cost	490 Marks
Depreciation 1% of building cost (mortgaged value) of 9,000 Marks	90 Marks
Operating expenses (management, janitor, water, garbage, street cleaning, electricity, maintenance, and insurance)	200 Marks
Necessary Rent per Year	780 Marks
Necessary Rent per Month	65 Marks

The rental does not include expenses for steam and hot water, which are pro-rated separately on the basis of fuel costs. Real property taxes do not appear in the above illustration since new buildings, including the land, were generally tax-exempt for 10 years after completion.

The total cost for a pre-war apart-

ment equivalent in size, although inferior in construction and layout, amounted to approximately 6,000 Marks. The monthly rent was about 40 Marks as contrasted with the 65 Marks computed above. Accordingly, newly built dwellings were considerably more expensive than pre-war ones, even after the rent of the latter had been raised by the government to 120% of the 1914 rates.

Almost everywhere in Germany, especially in the large cities, rents for new apartments were too high for families with low incomes. This resulted not only from high interest rates, but also from excessive building costs. In comparison with commodity costs, building costs increased incommensurately. Manufacturers, wholesalers of building materials, contractors, and employees in the industry profited from the high prices and wages. Building with public capital turned out to be one of the most profitable enterprises in the country.

There was a widespread demand for second mortgages at these low interest rates. The existing limited-dividend housing cooperatives and companies were the first to take advantage of these loans. Since 1900 a great number of such enterprises were organized partially with the assistance of progressive city administrations. These cooperatives and companies erected small apartments at cheap rentals. The structures were superior to those built by the ordinary commercial concern. Mortgages were obtained from the social insurance institutions which had accumulated large sums out of the compulsory old age insurance.

Notably since 1924, in addition to pre-war limited-dividend housing cooperatives and companies, thousands of new enterprises grew up like mushrooms. Only a part of them were needed. Frequently, the promoters had never had anything to do with housing; many of them were influential members of political groups, city-council men, or "men of straw" installed by contracting firms. Individuals and commercial real estate firms also obtained second mortgages out of public funds for financing of multi-family houses.

All these individuals, commercial or limited-dividend enterprises were required to invest a very small amount of capital. The 10% equity—even less for limited-dividend cooperatives and companies—could easily be watered. Government ordinances were disregarded and many building developments were in reality "financed at 100%." Simply enough, building cost estimates were raised to the missing equity, so as to result in excessive first mortgages. Government agencies used to pass quietly over such dishonest ways of financing.

Rents were also raised by the custom of paying a considerable "premium" to the first mortgagee, amounting often to 10% of the loan. This premium too was then accepted as part of the building cost. In Berlin and other cities of northern Germany, thousands of apartments were rented only after payment of a contribution by the tenant of at least 400 Marks per room. Later on, the contributions were changed to the form of tenant loans to the owners, which were ostensibly deducted from the monthly rental, but in reality included in the original calculation by official authorization. Besides, rent calculations were not always made honestly so that the owners were quite free to charge whatever rents they deemed advantageous.

These abuses of public loans for private enterprises were generally not exist-

ent in municipal housing developments. Rentals in municipal housing were relatively the lowest. The German cities, which already owned most of the water, gas, electric plants, street car lines, etc., claimed a large part of the rent-tax returns for their own housing projects. City ownership of these multi-family dwellings and one-family houses, however, was not the rule. The larger cities especially preferred to organize limited-dividend companies, the capital stock of which they owned all or the majority of the shares. They did this not only for economic reasons, to keep the management more out of politics and to abolish red tape, but also for other reasons. The German cities pledged themselves to their creditors not to mortgage their real estate. If a city had built houses, it would have been forced to raise the money for the first mortgages by issuing bonds. Such an increase of the city debt was not desired. For the limited-dividend housing company, the city had only to furnish the relatively small capital stock, whereas the first mortgages were supplied as described earlier. The limited-dividend company was the dominant type of German low-rent housing organization. The cooperatives assumed a role much less important.

Until 1929 there was considerable demand for the newly constructed apartments. The overcrowding in cities was such that people were willing to sacrifice other necessities for the sake of decent quarters. Many thousands of those who occupied pre-war dwellings in the center of the cities preferred to move into a modern housing development somewhere in the landscaped suburbs. The new housing projects found a ready market.

With the beginning of the depression in Germany in 1930 and the widespread unemployment and reduction of wages, the new projects found themselves in financial difficulties. Many tenants in the new housing projects could not meet their liabilities and were required to move back into older living quarters. Vacancies in new apartment buildings created such a loss of rent income that the owners could not keep up payments on mortgage interest. Many buildings went into receivership and finally were sold at auction. Consequently, the second mortgages were wiped out in such a procedure.

A slight improvement occurred when in December, 1931 the government decreed a reduction from 8 to 6% in interest rates on long-term loans and a corresponding reduction in other rates. It was said that the saving thereby had to be applied to reduce rents. A year before a special law for limited-dividend housing enterprises was enacted with the purpose of removing the various abuses. But this step was taken too late.

The present government has reduced the interest rates further from 6 to 4½%. No figures are available showing the result of this procedure.

Critical Comment on Financing of Low-Rent Housing in Germany with First Mortgages of Private Capital and Second Mortgages out of Public Funds

Financing of first mortgages by private capital and second mortgages by use of public funds led to excessive costs of construction. More satisfactory results would have been obtained if greater rigidity of control had been exercised over expenditures and appropriations. Since the funds had been raised by taxation and since the second mortgages called for low interest rates and no amortization, there were considerable

inducements for laxity in management of these loans. The opinion had spread rather widely that rent-tax mortgages were meant to be subsidies, which were to be written off some day.

It is interesting to observe that another picture would have resulted if private capital and public funds had been combined not in the hands of the owner, but in the governmental lending agency. The example previously used showed the following mortgages:

5,000 Marks first mortgage at 8% interest	400 Marks
4,000 Marks second mortgage at 1% interest	40 Marks
9,000 Marks mortgages call for interest payments of	440 Marks

This means that interest amounts to about 5% of the total.

Had the government agency itself taken up private loans at the rate of 8% to be combined with the rent-tax returns on a 50-50 basis, an interest charge of 4½% or 405 Marks would have ensued to cover 8% interest on 4,500 Marks private capital or 360 Marks and 1% interest on 4,500 Marks public capital or 45 Marks.

The financing of new building by means of a combination mortgage would have been superior in every respect. The government agency would have lent not 40% but 90% of the total cost. Rigid control over applications and estimates would have been a matter of fact. Since the government would have been responsible for interest returns on private capital, it would have been forced to be persistent in collecting mortgage interest payments.

Still more important, however, is the fact that this kind of financing shows stability in times of depression. If reduced salaries necessitate lower rents, the owner may first relinquish any return on his equity of 1,000 Marks or 50 Marks. He may further suspend interest payment on the second mortgage with the tacit agreement of the government agency. The money thus saved would most likely offset losses from vacancies and would prevent any marked reduction of rentals. The first mortgagees rarely consented to a reduction in interest rate; they always took legal steps in case payments were stopped in full or even in part.

In case of a combination mortgage, the government agency may reduce interest rates during critical times, to be used for a reduction of rentals; 1% of 9,000 Marks is 90 Marks, to which may be added a reduction of equity returns of 3% or 30 Marks; 120 Marks per year or 10 Marks per month would thus be saved without difficulty. Obviously, further reductions would be possible in emergencies.

It may be retorted that interest reduction would result in a deficit. Now, government subsidies would not be necessary. Deficits could be covered with new returns of the rent tax.

Another point speaks strongly in favor of the combination mortgage. Amortization of the mortgage is interlocked with the depreciation of the property. Even if a building were erected at excessive cost, the fact could be discounted by continuous depreciation and amortization of the mortgages. In German post-war housing, first mortgage financing generally ran for periods of five to ten years. After the time had elapsed, they were renewed and a premium had to be paid. As mentioned before, the amortization of the rent-tax mortgages was suspended for five years, and the waiving of amortization was continued over a long period. It has been a general practice to depreciate the value of a building at the rate of

1% per annum and to incorporate this depreciation in the calculation of rentals. As mortgages were not amortized, the owner could use the amount of the building depreciation for any purpose he liked. For example, years after erection buildings were reduced in book-value to the extent of 11%, while mortgages still maintained the original amount. The buildings, then, were well in the red. Even an amortization of 1% is too small, since 60 to 70 years, not 100 years, is generally assumed in Germany as the life of a building.

All these difficulties do not appear if depreciation of the property runs parallel to amortization of the mortgages. The amortization will be accelerated, if a fixed annuity is paid. For example, a mortgage of $100,000 is given at 1% interest and 1% amortization. A fixed annuity at 2% ($2,000) is paid each year until the mortgage matures. After the first year the amortization amounts to $1,000, the remainder of the capital is $99,000. In the second year $2,000 annuity is paid again; for interest returns, only $990 are necessary instead of $1,000; the saving in interest of $10 is applied toward the amortization, which increases from $1,000 to $1,010. After the second year the remainder of the capital is $97,900. In the third year only $979 interest returns are necessary; the amortization increases to $1,041; the remainder of the capital amounts to $96,859. After 70 years the $100,000 are completely amortized. The higher the rate of interest in an annuity the greater is the saving in interest through amortization and the quicker the mortgage is paid off. A mortgage at 2% interest and 1% amortization (3% annuity) will mature after 55 years. At 3% interest and 1% amortization (4% annuity) it takes 47 years.

The building should be depreciated at the yearly amount of the amortization of the mortgage. Such an amortization is similar to the rate of the devaluation of the property, the amount increasing at an accelerated rate from year to year.

The writer has proposed in a German periodical that a special mortgage bank for low-rent housing be organized. The aim of the bank would be to lower rents in new buildings and speed amortization. It was meant to replace all first mortgages to private capital and second mortgages out of public funds by permanent combination mortgages with a fixed annuity. The private mortgagees were to receive bonds in exchange, guaranteed by the government.

Consumption Characteristics of Domestic Gas Customers

By W. J. CROWLEY and H. S. JACOBS*

ATTEMPTS to solve the practical marketing problems which face the gas utility industry in the domestic field have brought about a realization that, in spite of the volume of worth while market analysis work which has been done, there is nevertheless a dearth of comprehensive data revealing the consumption characteristics of domestic gas customers. Far different is the situation in the case of the electric utility industry. Many of the electric utility companies have at one time or another analyzed the consumptions and demands of their domestic customers in order to determine the various relationships which affect, primarily, their pricing policies. As a result, the electric industry has been prepared to adopt advanced and aggressive pricing and sales policies.

Three factors in particular have tended to make the necessity for such research work appear less important to the gas utilities. First, there is the widespread use of the block rate for domestic gas service. Having adopted this form of rate, and for many years finding no need to change to another type, the gas utilities were not required to undertake the analyses which many of the electric companies found necessary when they were contemplating a change from the block form to the Wright demand form, using a measured demand or one estimated on the basis of socket count, actual connected load, or room count. Second, in the gas industry the customer's highest instantaneous or hourly demand is of less importance in determining cost of service than is the case in the electric industry. Gas does not have to be made the instant it is consumed, and therefore the demand relationships are not quite as vital as in the case of electric customers. A third factor which has caused gas companies to neglect the study of consumer characteristics is the wide acceptance of the belief that there is no great variation in consumption characteristics as between individual customers. Just how valid this idea is will be shown later.

Confronted with the lack of accurate information on the subject, and believing that a study of gas customer characteristics might lead to some valid conclusions with respect to the marketing and rate problems which have arisen out of the new wide-open competition for the domestic market, the utility company supplying gas to a part of the territory in northern Illinois outside of the City of Chicago undertook to analyze the consumption data of its domestic gas customers. This company was in a particularly favorable position to undertake such a survey. It supplies both gas and electricity in a large territory containing customer groups of a wide range of incomes, living habits, and means of livelihood. Furthermore, it supplies electricity for domestic service under a room-count type Wright demand rate, thus having a record of room-count of the homes of domestic gas customers. This latter factor enabled the company to make some distributions of consumption data on the basis of size of home which

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otherwise could not have been undertaken because of prohibitive cost.

The material used in the analysis was obtained from the meter reading sheets. An adequate representation of the domestic gas accounts was chosen by random sampling, great care being exercised to eliminate any errors of bias. For example, the accounts were so selected that the percentage of cases taken to total number of cases for each community was equal to the percentage of all cases selected to the total number of gas accounts. Moreover, after determining the number of cases to be taken for each community, that number of cases was so selected that each section of the community was adequately represented. The data were collected on cards by means of key-punch machines and afterwards sorted and tabulated mechanically. (In the effort to get as much worth while information as possible, the number of separate family living quarters in each dwelling was listed on the meter sheets by the meter readers during the month prior to the starting of the survey.)

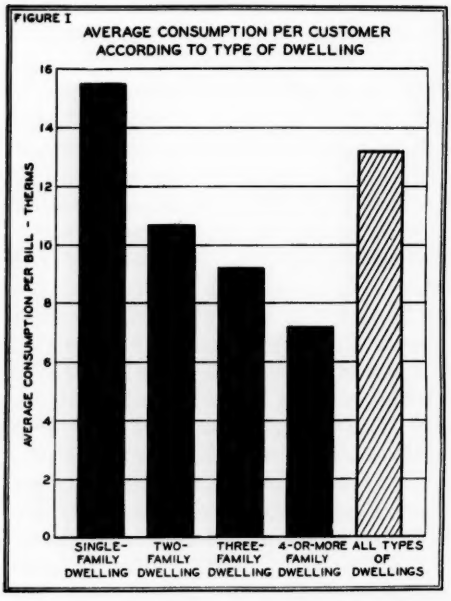
The results of the survey, particularly those distributions of number of bills and consumptions by type and size of dwelling, are very interesting and in some cases startling. Naturally, in the suburban area involved in this survey, most of the dwellings are single-family homes. It is interesting to note, therefore, that only 63% of the company's gas customers live in single-family homes. The percentage varies between communities, being about 50% in the urban territory just outside the city limits of Chicago, and increasing to 90% in the communities lying in the farming districts in the southern part of the territory served by the company. The percentage of customers in single-family homes in the urban territory just outside the Chicago city limits appears to be low because the cumulative effect of large apartment buildings is usually overlooked or minimized. The distribution of the customers according to type of dwelling is as follows:

Single-family dwellings.....	63.0%
Two-family dwellings.....	21.3
Three-family dwellings.....	3.1
Four-or-more family dwellings	12.6
Total.....	100.0%

This information sheds some light on the problem of scope of market. For example, practically every domestic gas customer has a gas range. Relatively few have automatic gas water heaters. The domestic market for such water heaters is limited to single-family and two-family dwellings. Naturally, the gas industry is aware of the fact that type of dwelling is one of the limiting features in the water-heating and space-heating market, yet frequently saturation data for appliances of this type are based upon total number of customers. This one factor will in many instances explain otherwise unexplainable differences in saturation percentages.

Even more interesting than the distribution of customers according to type of dwelling is the spread between consumptions of the different groups. Figure I shows that there is a wide range between the average consumptions of the customers in single-family homes and those in multiple-family homes. The average customer in the single-family dwelling uses 45% more gas than the average customer in the two-family dwelling, 66% more than the average in a three-family dwelling, and 116% more than the average in a four-or-more family dwelling. This relationship, particularly the spread between the consumption of customers in the one-family and the four-or-more family

dwellings, becomes more significant in view of the fact that the field for expansion of domestic gas sales is definitely limited in the case of customers in the large apartment buildings, whereas for customers in single-family homes, and to a lesser extent, those in the two- and three-family dwellings, there is much room for development.



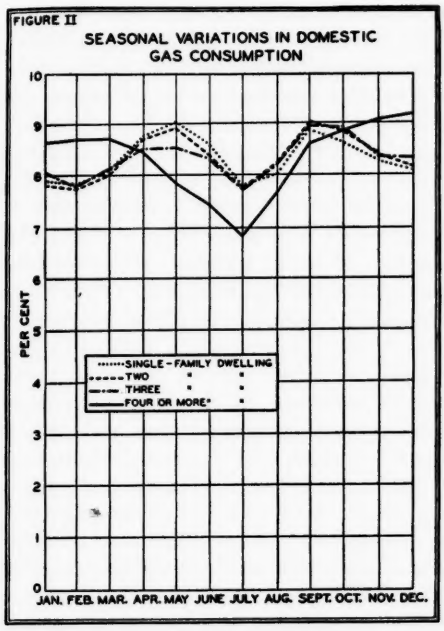
This information is of more than passing interest. It has some significance in connection with social trends. One of the factors which makes apartment homes attractive is the complete absence of responsibility for operation of household conveniences such as water heaters and furnaces. Economical, automatically-operating household equipment will tend to make the single-family home more popular. A great amount of effort is being devoted in this direction, particularly by electric equipment manufacturers. The gas industry must keep in step with this trend if it wishes to secure its share of the business in new single-family homes.

Now this information concerning consumption by type of dwelling merely sets out with exactitude for one company certain relationships of which the gas utilities are more or less aware, but which are far more useful on a quantitative basis than they are on a conjectural basis. However, the survey brought out a relationship with which the gas utilities are not so well acquainted. This relationship is significant particularly in regard to such problems as the determination of cost of service furnished to the various groups of domestic customers, and it throws more light on the subject of the "less profitable customer." When the monthly consumptions of the various groups of customers were distributed to determine the variation of use with the season, it was discovered that the annual load curves of customers in large apartment buildings was entirely different from those of the other three groups (Figure II). Whereas the latter made the greatest use of the service in the spring and fall, particularly in May and September, the maximum consumption by customers in four-or-more-family homes fell in the winter peak period. From the shape of the load curves on Figure II, it is apparent also that the load factor of customers in large apartment buildings is lower than that of the other three groups of customers. The natural result of such a combination of factors is higher relative demand costs in the case of customers in large apartment buildings.[1] It is apparent, therefore, that these customers as a group will tend to fall in the "Less Profitable" classification.

Correlative information on this subject was brought out in one of the analyses of minimum bills, the results

[1] This factor is, of course, offset to some extent by lower investment per customer in services and distribution mains, and reduced cost of meter reading, etc.

FIGURE II



of which are shown in Table I. These data portray vividly the relative value of the business of each customer group. It is interesting to note that, in this particular territory, the number of minimum bills rendered to customers in single-family homes is absolutely, as well as relatively, less than the number

TABLE I. MINIMUM BILL DATA—DOMESTIC GAS CUSTOMERS

Type of Dwelling	Percentage of Customers Having Minimum Bills to Total Number of Customers	Percentage of Minimum Bills Rendered to Total Number of Bills Rendered	Average Number of Minimum Bills per Minimum Bill Customer per Annum
1-Family.....	12.30%	3.56%	3.48
2-Family.....	25.20	7.59	3.62
3-Family.....	38.11	13.09	4.12
4-or-More Family	56.79	21.65	4.58
All Dwellings....	22.28	7.32	3.94

rendered to customers in four-or-more family dwellings, the former being only 70% of the latter. (The number of customers in single-family homes is five times as large as the number in four-or-more family dwellings.)

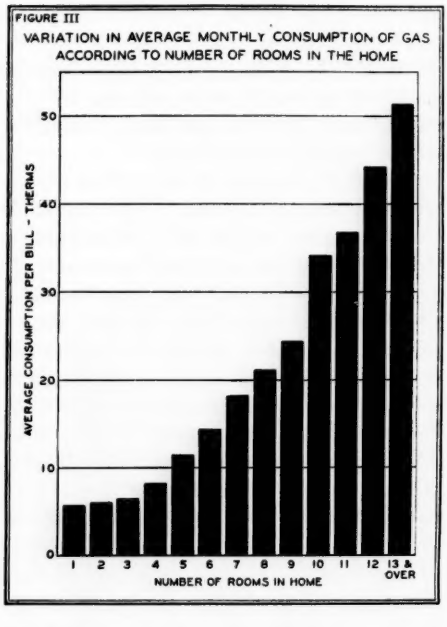
All the foregoing information should result in a keener appreciation of the importance of the single-family dwelling to the gas utility industry.

Although the gas industry has a general knowledge of some of the customer characteristics which were discussed in the foregoing paragraphs, the customer analysis brought out one characteristic which has quite generally escaped notice heretofore. The relationship referred to is that of the average monthly consumption of domestic gas customers to the size of the home (number of rooms). The prevailing idea, expressed briefly, is that, although use of electricity in the home is proportional to the number of rooms, use of gas is not. In support of this idea it is usually suggested that electricity can be and is used in every room, whereas gas is used ordinarily only in the kitchen, or in the kitchen and basement, and as a result consumption cannot bear any relationship to number of rooms. This idea was definitely disproved when the customer data were distributed according to the number of rooms per home. Figure III shows the average number of therms[2]

[2] Although the mean is a valuable aid in grasping the significance of statistical data, it does not give a very satisfactory description of the structure of a frequency distribution. For that reason, the median and quartile values expressed in therms are shown:

Size of Home (Number of Rooms)	First Quartile	Median	Third Quartile
1	4.8	6.4	8.0
2	3.2	5.6	9.6
3	4.8	8.0	11.2
4	6.4	9.6	12.8
5	8.0	11.2	14.4
6	9.6	14.4	19.2
7	11.2	16.0	24.0
8	12.8	19.2	28.8
9	12.8	20.8	36.8
10	17.6	26.4	31.2
11	16.2	30.4	53.6
12	14.4	32.8	54.4

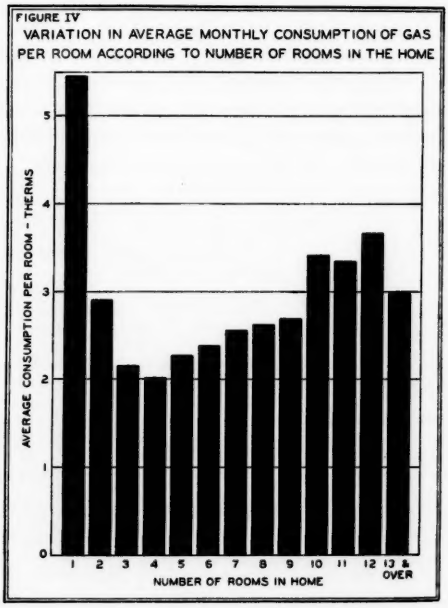
FIGURE III


VARIATION IN AVERAGE MONTHLY CONSUMPTION OF GAS
ACCORDING TO NUMBER OF ROOMS IN THE HOME
AVERAGE CONSUMPTION PER BILL - THERMS
0
10
20
30
40
50
1 2 3 4 5 6 7 8 9 10 11 12 13 & OVER
NUMBER OF ROOMS IN HOME

per bill for various numbers of rooms per home. There is a definite increase in consumption per bill for each size of home over the next smaller size. For the very small homes this increase is not proportional to the number of rooms, but that deviation should be expected as very nearly the same relationship is shown in studies of average consumption per bill of domestic electric customers in small homes. The consumptions of customers in 13-room and larger homes were grouped to avoid the irregularities which arise where the number of samples in each class becomes relatively small.

The close relationship between size of home and average consumption per bill is better revealed in Figure IV, which shows the average number of therms[3] per room for each size of home. These values were obtained by dividing the average therms per bill as shown in Figure III by the number of rooms per home. It is evident from this chart that, over the range which includes the vast majority of homes, average therms per bill are directly proportional to number of rooms per home. Thus the conclusion must be made that the consumptions in general are more than roughly proportional to the number of rooms per home. It is interesting to note, moreover, that as the size of the home increases, the average number of therms per room does not tend to decrease; instead, there is a definite and fairly regular increase (except, of course, in the case of the 1-, 2-, and 3-room dwellings). The average per room for "all over 12-room" dwellings is lower than the average for 10-, 11-, and 12-room dwellings. This effect arises out of several causes, one being, in all probability, a slight variation from the

FIGURE IV


VARIATION IN AVERAGE MONTHLY CONSUMPTION OF GAS
PER ROOM ACCORDING TO NUMBER OF ROOMS IN THE HOME
AVERAGE CONSUMPTION PER ROOM - THERMS
0
1
2
3
4
5
1 2 3 4 5 6 7 8 9 10 11 12 13 & OVER
NUMBER OF ROOMS IN HOME

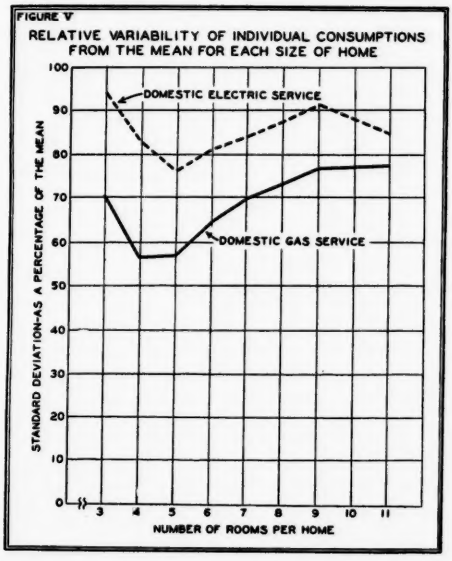
[3] Gas supplied in the major portion of the territory covered in the survey referred to in this article has a heating value of 800 B.t.u. per cu. ft., each therm being therefore the equivalent of 125 cu. ft. of gas.

proportionality existing between size of home and average consumption per bill in homes from 4 to 9 rooms. It might be well to point out that, in obtaining the data which were analyzed to determine the relationships being discussed, all domestic space-heating customer consumption statistics were eliminated. Therefore, the increase in consumption per home as number of rooms increases is in no way a result of the use of gas for space-heating purposes in the larger homes, excepting, of course, the incidental use of gas logs and similar appliances. Even in smaller homes, however, the gas range is used for space-heating purposes on cold mornings; therefore, the element of space-heating is present in some degree in each home-size group. The proportionality in Figures III and IV was found to be present not only in the case of single-family homes, but also in the case of consumptions of customers living in 2-, 3-, and 4-or-more-family dwellings.

It has been demonstrated that the average consumption of gas varies with size of home almost exactly as does the consumption of electricity. Some question might arise, however, as to the distribution of the individual consumptions with respect to the mean for each home size. Some evidence of the regularity of that distribution can be gained from a study of the median and quartile values (see footnote 2). Those values do not, however, enable the observer to tell whether or not the individual consumptions cluster more closely about the mean than is the case in the distribution of electric consumptions by home sizes. In order to bring out the relative compactness of the distribution of consumptions about the means, the standard deviation from the mean was calculated for each home size, for both the electric[4] and gas consumption distributions. Since the results were expressed in kilowatt-hours and therms respectively, it was necessary to reduce these units to a comparable basis. This was done by relating the standard deviation in each case to the mean, expressing the standard deviation as a percentage of the mean. The values thus determined are shown on Figure V. It will be noted that in every instance the individual gas consumptions are grouped more closely about the mean than are the electric consumptions.

The foregoing information on variation in gas consumption with size and type of home definitely disproves the belief that there is no relationship between size of home and consumption of gas, and that each gas range uses 10 therms of gas per month, each automatic gas water-heater uses 30, and so on.

FIGURE V



[4] The electric consumption distributions were determined by means of surveys made from time to time of consumption characteristics of domestic electric customers served by Public Service Company of Northern Illinois.

It proves, moreover, that the consumption characteristics of domestic electric and gas customers are quite similar. In addition, the information shown on Figure V appears to be a sound basis for the conclusion that development of use of gas could be stimulated successfully through the use of the room-type rate. In fact, the closer distribution about the mean in the case of the gas consumptions indicates that there would be less chance of irregularities resulting from extreme cases than there would be from extreme electric consumptions where the room-type rate is used. It appears that the variations in consumption which have been revealed are evidence that a type of rate more promotional than most block rates must be adopted by the gas utility if it is to exploit successfully such potential markets as, for example, the domestic water-heating market. However, the determination of the best type of rate for domestic gas service does not fall within the scope of this discussion. Instead, the purpose is to point out that the basic consumption differences which justify use of a rate more promotional than the ordinary block rate do exist in the case of the use of gas for domestic purposes.

The weight of the evidence presented thus far seems to be sufficient to prompt the conclusion that some of the postulates which have been accepted for years in the gas industry must be revised in the light of newly revealed facts. In this survey alone the data obtained provide the basis for a distinctly new concept of the consumption characteristics of customers in the domestic group. Even if this information were not essential for the most effective solution of problems of immediate importance now facing the gas industry, it would still be of great value since it gives a truer understanding of the characteristics of the most important class of customers served by the gas industry. There is room for a great amount of additional study on this subject and it is hoped that this article will provide the stimulus for that work, since similar data for other territories will be required to enable the gas industry to reach conclusions in regard to this subject on a national scale.

The Limit of Economic Justification for Flood Protection

By GILBERT F. WHITE*

ESTIMATION of the limit of economic justification for providing protection from floods involves some of the most difficult economic and geographic problems associated with formulation of programs for water use and control.

All streams in their natural state experience fluctuations in discharge from season to season and from year to year which cause variation in the extent and depth of inundation of their flood plains. In adjusting his use of a given part of a flood plain to conditions of flooding, man has the choice of occupying the land at the hazard of occasional flooding, of occupying it with partial or complete protection, and of staying out of the flood plain entirely. This range of choice applies to lands which have been occupied in spite of, or without knowledge of, a flood menace as well as to those which are unoccupied because of floods or for other reasons. Numerous flood plains have been settled in complete ignorance of the overflows which some day will occur. Many others have been encroached upon knowingly by interests willing to risk flood damage in order to utilize fertile alluvial soils, navigable waters, water supply and waste disposal facilities, or other natural resources not as readily available outside of the plain.

Whatever the present use, one of the fundamental questions which may be raised in connection with every incompletely protected flood plain is whether or not the costs of possible protection works are commensurate with the benefits to be derived therefrom. There is clearly an economic limit to the justified expenditure for protecting any individual area, but the question remains of how this limit may best be determined. In broad outline, the proper solution would seem to comprise: (1) estimation of benefits accruing from possible protection work, (2) estimation of costs of protection, and (3) comparison of costs and benefits for various degrees of protection.

At present there is lack of agreement among interested technicians as to the most effective method of applying this general procedure to specific cases, a disagreement which springs in large measure from two basic problems of the social economics of conservation of natural resources. As outlined by Gray, these are the old problems of defining social criteria by which benefits and costs may be evaluated, and of discounting future benefits.[1]

Notwithstanding the huge expenditures for flood protection during the past 20 years, only a slight amount of attention has been paid to the economic justification for the works constructed. Detailed study of flood protection has been restricted for the most part to determination of engineering practicability. Several relatively efficient and standard methods of estimating benefits have been developed by agricultural engineers for cases where protection is a corollary of drainage of wet lands for agricultural use, but these methods have been designed primarily to assist in the

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[1] L. C. Gray, "Economic Possibilities of Conservation," 27 *Quarterly Journal of Economics* 518-9 (May, 1913).

allocation of costs, rather than to furnish a basis for judging the economic feasibility or non-feasibility of the proposed works. The lack of careful economic analysis in the past has been the consequence in part of vague public policy with respect to the two fundamental issues noted above. It has been attributable in larger measure to the fact that benefits to be derived from protection of many wet lands and certain cities have been so great relative to costs that the feasibility of protection work has been apparent on superficial inspection.[2]

As appropriate remedial measures are developed for areas of that type, an increasing proportion of less clear-cut cases will be subject to study, and therefore the need for refinement of method of estimation will increase. The publication during the past five years of the "308"investigations of the United States Corps of Engineers already has focussed attention on problems of estimation,[3] because a large proportion of the scores of possible flood-control projects examined in those studies are reported as being of doubtful feasibility. Moreover, the method of analyzing economic justification differs greatly from one report to another, no less than a dozen distinctive methods having been employed.

The significance of methodology as it affects the design of protection works is well illustrated by the federal program of flood control in the alluvial valley of the lower Mississippi River. After the great flood of 1927 had caused property damage in excess of $200,000,000, and had demonstrated the impracticability of the old levee system, a new plan of protection was framed in terms of considerations which later were reviewed as follows:

"From such records as are available of actual property loss it appears that the average annual flood loss . . . , is $6,000,000 over territory within the range of the waters of the main stream. Due to the unreliability of the record and for the sake of liberality, this figure may be raised to $10,000,000. This assumption indicates that the amount that should be expended by the Federal Government at this time on this flood-control project is not in excess of $200,000,000, interest being taken at 5 percent.

"The adopted project carries an authorization of $325,000,000, of which $100,000,000 may be charged to navigation and $25,000,000 to the protection of life in centers of population, leaving $200,000,000 as of general application for flood protection. The adopted project, in view of these figures, may be taken as economically sound; and any other project whose cost is greatly in excess of the adopted project may be considered as economically unsound if considered from the single standpoint of the protection of the existing property values within the reach of the waters of the main stream or its backwaters."[4]

At the time the foregoing estimate was prepared the magnitude of the lower Mississippi problem, certain legal limitations, and the urgency of prompt remedial action seem to have precluded the making of detailed measurements of benefits of the type previously employed by private engineers on several smaller projects. Nevertheless, the validity of the estimate may be questioned. Did it utilize the most effective method of determining the limit of economic justification? Was the established limit

[2] However, a number of insolvent and abandoned drainage districts now bear testimony to the inadequacy of rough analyses which have been made in the past.

[3] These reports, made under the provisions of the River and Harbor Act of January 21, 1927, in accordance with House Document No. 308, 69th Congress, 1st Session, present comprehensive studies of the control of floods and the use of streams for navigation, irrigation, and water power in most of the major drainage basins in the United States.

[4] 71st Congress, 3rd Session, "Control of Floods in the Alluvial Valley of the Lower Mississippi River," House Document No. 798, p. 4.

excessive? Or is there a possibility that expenditures several times the estimated limit of $325,000,000 actually were warranted, in which event a comprehensive system of reservoirs would have been justified on economic grounds?

Similar questions may be asked concerning most other methods now in use for estimating economic justification, but no clear-cut answers are forthcoming. Indeed, it is doubtful whether, in view of the peculiar characteristics of floods and flood damages, estimation can ever attain any other status than that of a rough guess. The salient problems which make difficult the estimation of benefits, the estimation of costs, and the comparison of benefits and costs are reviewed briefly in the following pages. These problems are discussed solely with the view of describing and clarifying points at issue, and special emphasis is given those points involving broad public policy.[5]

The Estimation of Benefits

The chief steps in the estimation of benefits resulting from a given amount of protection are (1) the identification of benefits, and (2) their measurement. Each step is linked closely with the other. On the one hand there is a widespread inclination to take into account only those benefits which are measured easily, and, on the other, a reluctance to attempt to measure items which are not conceded by all interests to be indices of benefits.

A. Classes of Benefits

Benefit is considered in this discussion to be the gross increase in productivity resulting from elimination or reduction of the hazard of overflow. The increase may represent prevention of flood damage which would be experienced were it not for flood protection, or it may take the form of potential new income which would not be produced while the flood hazard existed. Benefit may also be classified according to whether it accrues to specific realty and interests directly affected by floods, or to the public at large.[6]

1. Existing vs. Potential Benefits. If it be assumed that no change were to occur in the economic activity of a flooded area following completion of protection works, the increase in productivity would be equivalent to the losses in goods, services, and human life which would result from flooding were it not for protection. These may be termed the *existing* benefits. They constitute the human energy which otherwise would be wasted by floods. However, if it be assumed that a change in use of land were to take place as a consequence of protection, and that additional increments of income were to be developed thereby, the increase in productivity would include new income produced as well as old income preserved. The new increments in capacity may be termed the *potential* benefits. The distinction between existing and potential benefits resembles the distinction between preservation and reclamation. One presupposes maintenance of the status quo, the other implies possible expansion of productive capacity.

Where a city such as Columbus, Ohio has so encroached upon the flood plain that densely built-up portions of its

[5] For discussions of the problems of financing public flood protection works see: H. L. Lutz, "Financing Flood Control Measures in the Mississippi River Valley," 5 *Journal of Land & Public Utility Economics* 169-175 (May, 1929) and Public Works Administration, Mississippi Valley Committee, *Report* (Washington: Government Printing Office, 1934), pp. 27-9 and 217-20.

[6] Other classifications of benefits have been suggested but the writer believes that these two are sufficient for the purposes of this general discussion. Tangible and intangible, and direct and indirect, are used in certain studies of benefits as being synonymous with measurable and immeasurable, although there is no standardized usage.

central business district are subject to occasional damaging floods, potential benefits may be relatively unimportant by comparison with existing ones. Little change in intensity and type of land occupancy in areas of that type may be expected to result from consummation of a flood-control program unless the program requires alteration of street or drainage location. On the other hand, where a large portion of the flood plain in an urban area is not occupied or is settled very sparsely, existing benefits may be slight by comparison with potential benefits. Thus, contraction of the flood plain of the Trinity River in its course through the City of Dallas had the objective of reclaiming wide, unoccupied flat lands for future manufactural and commercial use.[7]

The contrast is even more striking in cases where cultivable lands are subject to overflow. Potential benefits in an agricultural area can be identified only in terms of a proposed type of farming assumed to be properly adjusted to the environment of the area when protected. If the type of farming under flood hazard is identical with that contemplated under conditions of protection, and if all cultivable land is occupied, then potential benefits would be negligible. However, on many flood plains the farming system, having been adjusted to frequent flooding, would undergo change if protection were to be provided. On many others no agriculture whatsoever has been developed, and all benefits would be potential. The recognition of potential benefits has, indeed, been a basic principle in determining the feasibility or non-feasibility of drainage for agricultural lands.[8]

Flood-control studies conducted by the Corps of Engineers in the lower Mississippi River basin and other basins have been confined by precedent to analysis of existing benefits, as is illustrated by the example already cited and by the following opinion rendered by the Supreme Court:

> "The conditions existing in the valley of the river demonstrate that the work of the Mississippi River Commission and of the various State Commissions, in constructing the series of levees from Cairo to the Gulf is for the purpose of prevention of destruction and improvement of navigation by confining the river in its bed and is not for purposes of reclamation."[9]

The established federal policy of ignoring potential benefits in unoccupied areas has been defended on the ground that the object is preservation rather than reclamation, but where reclamation is an inseparable corollary of preservation the exclusion of potential benefits is purely arbitrary. Potential benefits accrue irrespective of whether or not they are evaluated. Here, then, is one of the major social problems of flood protection: shall a public undertaking take account of potential benefits?

2. Special vs. General Benefits. Benefits, whether they be existing or potential, also may be classified according to their incidence. Those accruing to a specific piece of property or interest so as to increase its productivity in a manner different from the entire community may be termed *special benefits*. Those shared by the general public may

[7] Albert S. Fry, "Dallas Reclaims 10,000 Acres in the Heart of the City," 103 *Engineering News-Record* 804 (November 21, 1929).

[8] Bernard A. Etcheverry, *Land Drainage and Flood Protection* (New York: McGraw-Hill, 1931), p. 282.

[9] *Cubbins v. Mississippi River Commission*, 241 U. S. 351 (1916).

The controversy surrounding this issue as presented in the lower Mississippi flood-control project is summarized in 70th Congress, 1st Session, Frank R. Reid, "Flood Control in the Mississippi Valley," House Report No. 1072, pp. 12, 14-5, 148-53, and 155-8.

be termed *general benefits*.[10] This is a distinction between increments attaching specifically to economic activity within the overflowed area, and those accruing to the public at large both within and without the area.

To the first named class belong those benefits resulting from prevention of losses of inventory (crops, stocks of goods, and wild life), losses of means of production (soil, factories, commercial buildings, bridges, railways, and highways), and losses of durable consumer goods (clothing and shelter).[11] In an agricultural area they include the total increase in the income-producing capacity of the land as represented by gain of crops, live stock, soil, buildings, and implements which otherwise would be lost. Drainage enterprises have in most cases recognized improvements in conditions affecting health, improvements in accessibility, elimination of the inconvenience of evacuating dwellings in time of flood, reduction of hazard of loss of life, and any other factors which have the effect of increasing the selling value of the land to be special benefits.[12] In an urban area special benefits include prevention of injury to physical property, elimination of the expense and inconvenience of evacuating buildings temporarily, improvements in conditions affecting health, and prevention of interruption in business. Special benefits as identified here include most of the so-called "tangible" and "direct" benefits mentioned by the Corps of Engineers in its studies,[13] but the class is also considered to contain certain of the less tangible and so-called "immeasurable" benefits noted above as recognized by drainage districts.[14] Dangers of loss of business or loss of life are factors difficult of measurement which nevertheless bear a marked relation to productivity of property in an area of flood hazard.

To the class of general benefits belong such items as prevention of interruption in mail, freight, and passenger traffic, of disruption of commercial organization outside the flooded area, of damage to public health, of social instability induced by the flood hazard, and of other conditions affecting the prosperity of the entire community or the nation. Just as a town serving the farmers on a newly reclaimed flood plain may prosper from the reclamation, so may an entire city gain from protection of one component part, and so, too, may the nation reap substantial benefits from the prevention of a disaster which affects every aspect of the national life as profoundly, for example, as did the Mississippi flood of 1927.[15] At present there is no common agreement

[10] The legal usages of these two terms as developed in the assessment of drainage and other local improvements may be cited from *Ballentine's Law Dictionary*, 1930, p. 1217:

"Some courts hold that only those benefits are special which directly and physically operate upon the particular property in a manner different from and not shared in common by other property in the neighborhood and which enable the owner to use it with greater advantage; and that all other benefits which increase the value of the particular property in the neighborhood are general benefits. Other courts hold that if property is enhanced in value by reason of the improvement, as distinguished from the general benefits to the whole community at large, it is specially benefited, and is to be assessed for special benefits although every other piece of property upon or near the improvement may be more or less likewise specially benefited."

[11] National Resources Board, E. Johnston Coil, "Identification of Benefits from Public Works," *Report*, December, 1934, pp. 366-368.

[12] U.S. Department of Agriculture, George R. Boyd, "Drainage District Assessments," *Department Bulletin*, No. 1207, pp. 11-18 (1924).

[13] 73rd Congress, 1st Session, "Cumberland River, Kentucky and Tennessee," House Document No. 38, pp. 60-61.

[14] Boyd, *op. cit.*, pp. 13-14.

[15] For a brief account of some of the effects of this flood on the nation's business organization see: National Bank of Commerce of New York, "Economic Effects of the Mississippi Flood," 9 *Commerce Weekly* 24-30 (June, 1927). The American Red Cross publishes detailed reports on flood disasters for which it has directed relief activities.

as to the exact nature of what are here termed general benefits. Recognition has been given to them as a class, but not as individual items. Two typical definitions of the class are as follows:

"When a community is involved, as is usually the case, these difficulties [of estimating benefits] are greatly multiplied, not only because of the many properties to be considered but because public utilities, some of which are almost indispensable as continuing functions, have a relation to public welfare entirely out of proportion to their physical value. Here are involved benefits, some of them intangible, to the community as a whole,"[16]

and,

" . . . such a general interruption of commerce would itself have a deterring effect upon the business of the nation generally."[17]

No intensive studies directed at precise identification of these diffused effects have been made. Prevention of disruption of business activity and of communication are real benefits, but expenditures for relief of flood sufferers, and increases in taxable property value are examples of items sometimes referred to as general benefits which are in fact indices of special benefits. General benefits comprise many of the so-called "tangibles" noted by the Corps of Engineers and other agencies, but, as has been suggested, some of the intangibles are special, and, conversely, certain of the tangibles, like prevention of delay in movement of mail, are general in character.

The extent to which general benefits should be recognized in public flood-protection undertakings remains an open question.

3. Flood Protection and Land-Use Planning. Inherent in every estimation of benefits is a specified use of the land affected by protection. If the benefits are restricted to the existing ones, a preservation of the existing system of land-use is implicit in the estimate. If potential benefits are evaluated, one or more possible plans for extended or changed land-use is presupposed. Thus, public participation in any protection scheme contains either a direct or a tacit approval of anticipated uses of the protected land.

Agricultural engineers commonly have assumed that the type of farming in a reclaimed area would conform to that in near-by areas, and the engineers interested in the protection of cities have concerned themselves chiefly with the preservation of existing land uses. The possibilities of integrating flood-protection schemes with general plans for city and rural land use are great,[18] but they have been neglected for the most part. Certain projects have run counter to the best interests of the community as a whole, and others have been executed without attention to their potential utility as instruments of social change. The Mississippi Valley Committee is more emphatic on this point than any other federal agency, as is suggested by its recommendation that no protection be given to agricultural areas in the Mississippi Delta unless appropriate measures are taken to insure an improvement in present unsatisfactory conditions of living.[19]

Land planning has additional importance as it relates to the feasibility of reducing flood wastage by means other than protection. It seems entirely possible that in some flood plains changes in location and structure of buildings,

[16] Mississippi Valley Committee, *op. cit.*, p. 27.

[17] Reid, *op. cit.*, p. 121.

[18] Arthur A. Shurtleff, "Flood Destruction and Town Planning," 4 *City Planning* 62-64 (January, 1928); Morris Knowles in "Discussion on Flood Problems," 85 *Transactions of the American Society of Civil Engineers* 1524-1525 (1922).

[19] Mississippi Valley Committee, *op. cit.*, p. 203.

or modifications of farming system may yield net gains greater than those from control or preventive works. Furthermore, if protection of a settled area is shown to be not justified, it may be necessary to develop substitute uses of the land.

It is apparent that any evaluation of benefits must take into account the relation of the contemplated protection to programs of urban and rural land use if the full social significance of both existing and potential benefits is to be recognized. A private enterprise would pay little attention to these considerations. Whether or not public enterprises will give full weight to them hinges on public policy yet to be formulated.

B. Measurement of Benefits

Past efforts to assign quantitative value to flood-protection benefits have been confined for the most part to measurement of the more tangible aspects of special benefits, although some few rough attempts to measure general benefits have been made.

1. Measurement of Special Benefits. Two major methods are in general use for evaluating those benefits which accrue to special realty or interests. One is based on the assumption that all the damages resulting from past or hypothetical floods which might be prevented are the equivalent of benefits. This may be termed the *damages* method. The other assumes that the differential in market value of a given piece of property before and after flood-protection works have been constructed is equivalent to the benefits derived from protection. This may be termed the *differential* method. Both methods represent attempts to gauge the present worth or value of future protection: the one in terms of a projection of past damages into the future, the other by means of present estimates taking into account probable future damages and other factors as well.

By means of probability analysis of hydrologic data it is possible to estimate in a very rough manner the magnitude of flooding which will occur on the average of once in five years, once in ten years, and for any other frequencies up to great floods having an annual chance of recurrence of as little as $\frac{1}{10}$ of 1%, that is, once in 1,000 years.[20] In any single estimate of justification the degree of protection—the frequency and magnitude of the largest flood for which control works are designed—is utilized as a basis for measuring benefits even though the calculation of frequency may be subject to high probable error. Common practice also assumes a number of different maxima in order to determine the maximum degree of protection commensurate with cost.

The chief variations of the damages method may be illustrated by examples of "308" report estimates of benefits which would accrue from the protection of agricultural lands along the Missouri River from St. Joseph, Missouri to the mouth. In this instance the engineers submitted a number of alternative estimates, the three most important of which were calculated as follows:

A. "The average annual damage computed from the past period of record (29 years), capitalized at 5 percent to indicate the total justifiable expenditure."

B. "The average annual loss computed from future damages estimated over a

[20] Good discussions of the technical problem of estimating flood occurrence are found in Allen Hazen, *Flood Flows: A Study of Frequencies and Magnitudes* (New York: John Wiley and Sons, 1930), and Adolph F. Meyer, *The Elements of Hydrology* (New York: John Wiley and Sons, 1928), pp. 329-387.

The most comprehensive treatment is in U. S. Geological Survey, Clarence S. Jarvis and Others, "Floods in the United States", *Water Supply Paper*, No. 771, 1936.

100-year period, capitalized at 5 percent."

C. "The present worth of the flood damages, capitalized over the period of flood frequency."[21]

Method A assumed that the 29 years of record were a fair sample of the future, and that damages similar to those experienced in the past would continue indefinitely. Method B was based on an estimate of the hypothetical losses which would occur if all the floods of a frequency of more than 1%—that is, once in 100 years—were to occur over a 100-year period. This required interpolation of damages for many floods which had not been experienced in the 29 years of record. The 100-year flood was taken as the maximum because it was thought that any larger flood would cause only slightly more damage to agricultural lands. Method C used the same computations as in B except that instead of dividing the total damages by 100, it was assumed that the 100-year flood would occur at 100-year intervals, and that each lesser flood would occur at the end of a period equal to its frequency in years. The present worth of the damages done by floods of each frequency represented "the amount of money which may be expended at the present time in order that the future losses may be avoided."[22]

All three methods used identical basic data regarding past floods and past flood damage. The range of the results in Table I indicates that, depending on the method employed, the benefits of flood protection may be approximately $7,500,000, $13,000,000, or $16,000,000.

TABLE I. ESTIMATES OF BENEFITS ACCRUING FROM PROTECTION OF MISSOURI RIVER BOTTOMLANDS, ST. JOSEPH TO THE MOUTH*

Method	Total Damages for Chosen Period	Mean Annual Damage	Present Value of Protection
A	Indefinite	$807,414	$16,148,280
B	$37,385,000	373,850	7,477,000
C	37,385,000	—	13,148,000

*Source: 73d Congress, 2d Session, House Document No. 238, p. 102.

Which one, if any, is correct? Methods greatly resembling the three described above may be found in most other reports on flood protection, both federal and private. The common procedure is to use only one of the three, the choice being influenced by available data on flood occurrence and flood damage, and by the opinion of the engineer in charge.

All three have serious weaknesses from the standpoint of reliability of measurement. The most fundamental objection to use of the damages method hinges on the basic assumption that damages are equivalent to benefits. All damages experienced as a consequence of floods in the past are not indices of benefits which would accrue if protection were to be provided in the future. The type and density of human occupance of a flood plain may have changed notably and progressively in the intervals between floods of record and even between the most recent flood and the time when protection works are under examination. Instances also may be cited in which

[21] 73rd Congress, 2d Session, "Missouri River," House Document No. 238, p. 100. Mention of several other estimates is omitted because they represent variations of those described.

[22] *Ibid.*, p. 101. An interesting variation of this last-named method is the following from 72d Congress, 1st Session, "Lehigh River, Pa.," House Document No. 245, p. 28. "The normal distribution of the most destructive floods of a century would probably group them more or less systematically about the mid-point; therefore it appears advisable to reckon interest accumulations for a 50-year period in connection with the financing program, thus creating in 50 years a capital sum equal to the total estimated flood damages for the coming century and presumably adequate to pay for these losses as they occur. In that time, each dollar placed at 3½ percent interest, compounded semi-annually, would amount to $5.66, consequently the required initial investment is. . . ."

This general method of calculating present value is outlined in Hazen, *op. cit.*, pp. 173-176.

the costs of flood-fighting and of repairing levees damaged by flood are included in the computation of benefits.[23] In a given area, if items of this class are taken to be indices of benefits, if existing protection works are costly and totally inadequate, and if the works fail frequently, a tremendous amount of benefit from adequate protection can be demonstrated. This, in essence, is a simple pyramiding procedure of adding assets to liabilities to secure a sum alleged to be total assets. Furthermore, the damages method fails to take account of the class of intangible special benefits represented by prevention of injury to health and business, and it disregards potential benefits in large measure. In a few cases where the period of flood frequency is very long, future damages have been expressed as more than 100% of past damages for a flood of the same frequency in order "to allow for future growth and development of the area," but this has been accomplished by applying a rough percentage increase, and has not been predicated on estimates of specific changes in land use.[24]

A second weakness of the damages method lies in the fact that the collection of information on damages is subject to error at numerous points. Partially systematic attempts to gather information on flood damages have been made by the Corps of Engineers during the past eight years, and incomplete estimates have been made from time to time by the United States Geological Survey and the Weather Bureau. If a flood occurs by chance at a time when protection is being studied, it is possible to take a relatively complete census of property losses. Even so, complications arise from the disposition of local interests to exaggerate their losses unduly, and from the considerable period of time which may elapse before some losses, like those to building foundations, may become apparent.[25] However, if no recent large floods have occurred, it becomes necessary to refer to old newspaper files, the memories of old residents, and similar sources. Information secured by these means must be checked and expressed in terms of present values, in order to estimate what the total losses from a former flood would be were the flood to occur again. Each operation introduces fresh opportunity for error or judgment. It may be noted here that, notwithstanding the fact that the Corps of Engineers collects information on flood damages in most parts of the United States, there is no uniform schedule for collecting these data. No two divisions use precisely the same criteria of damages or of benefits.

A third source of error in the general method lies in the interpolation of damages from floods which have not been experienced in the period of record, but which probably will occur in the future. Referring again to the Missouri River examples, it may be noted that Method A assumes that the damages of the past 29 years will continue indefinitely, or, in short, that the period of record is a fair sample of average conditions. It may actually be abnormal, normal, or subnormal. In agricultural areas where, in most cases, the infrequent floods are of relatively little consequence, such an assumption may be near the truth. However, if the length of stream-flow record permits, a computation of damages for the entire period of the frequency of the maximum flood

[23] 72d Congress, 1st Session, "Illinois River, Illinois," House Document No. 182, pp. 40-43.

[24] "Missouri River," *op. cit.*, p. 122.

[25] An example of the exaggeration of estimates prepared by local interests is given in: 71st Congress, 2d Session, "St. Francis River, Mo. and Ark.," House Document No. 159, pp. 57-60.

is more accurate. If the total damages are expressed as an average, as in Method B, no new assumptions are made, but in computing present worth, as in Method C, there is the very extraordinary hypothesis that the flood of each frequency will occur at regular intervals equal to its frequency, i.e., that 100-year floods will occur 100 years apart. Unfortunately, floods are most irregular in their occurrence, and the 100-year flood may occur in one or ten years, but without some assumption as to periodicity of floods it is impossible to apply Method C.

The choice of time period for capitalizing or discounting benefits has a profound influence on the magnitude of the final estimate of total benefit, but because of its relation to the capitalization period for calculating costs, it will be discussed in a later section on comparison of benefits and costs.

The *differential method* of measuring benefits comprises direct estimation of the differential between present value of land with and without protection. As a procedure commonly employed in evaluating benefits for all types of local improvements it has had wide use outside of flood-protection work. As applied to flood protection it contains several special difficulties arising from the uncertainty of flood occurrence.

The most extensive single application of the method probably has been made by the Miami Conservancy District. In that case the special benefits accruing to some 77,000 individual pieces of property in the flooded portions of Dayton, Hamilton, Piqua, and adjacent farm lands in Ohio were evaluated by (1) appraising the market value of the property as of a time immediately before the flood, (2) determining a "flooding factor" of from 1 to 100 based on the severity of flooding, especially during the great flood of 1913, and (3) applying the flooding factor to 40% of the appraised market value.[26] Since floods had not been anticipated generally before 1913, the market value was considered a fairly reliable measure of value if flood protection were to be assured. The 40% figure was adopted, after conference with real estate experts and local property owners, as the depreciation in value which might be expected to occur on the property affected most severely if flood protection were not provided. The flooding factor was used to scale down the benefits on properties flooded less seriously. The entire procedure was based on assumptions that appraisers were fully cognizant of the nature of flood menace in setting depreciation at 40%, and that market value was a fair index of total productivity of the land.

Inherent in the choice of 40% are most of the considerations which have been mentioned as complicating the estimation of total benefits by the damages method. In a city where the residents had not experienced a recent flood, it would be difficult to gain popular agreement as to estimates of depreciation and it probably would be necessary to rely on the damages method for the most part, while in a city which had suffered repeated flooding the existing market value no doubt would reflect allowance made for the flood hazard. The unexpected occurrence of the Miami flood of 1913 was, therefore, most fortuitous from the standpoint of measuring benefits. Moreover, the disastrous consequences of that flood developed a strong conviction among the residents of Dayton that protection must be had at almost any cost, and it seems apparent

[26] "Appraisal of Flood Protection Benefits and Damages in the Miami Valley," 89 *Engineering News-Record* 831-834 (November 16, 1922). The 40% was later reduced to 30% when it became evident that benefits were far in excess of costs.

that they were more concerned with appraisal of benefits as a means of dividing costs on a fair basis than as a means of determining justification.[27]

The Flood Commission of Pittsburgh reported flood-protection benefits consisting of the estimated future flood damage for a 20-year period, and of the estimated increase in real estate value which would result from protection.[28] The first was a measure of existing benefits by the damages method, the second a measure by the differential method of existing and potential benefits combined. In that instance, as in numerous other studies where both damages and differential methods were employed, it seems likely that the total estimate of benefits contained gross duplication because the estimates of change in land value made partial allowance for probable future damages.

The differential method has been widely employed in drainage and flood-protection work for agricultural land. Very rough estimates of differential in value have been prepared by comparing the selling price of unprotected land with that of near-by protected land of the same soil type, making due allowance for differences in improvements. This is the most satisfactory and commonly used measure for reconnaissance surveys of justification, because rough comparisons between cost of protection and value of adjacent protected land can be made readily.[29] The basis for a differential has been worked out with precision for a number of flood plains by analyzing the effects of various frequencies and depths of flooding on the net farm income, and under these circumstances much the same type of data, which would be collected under the damages method, have been used in a refined form.[30] This method may be applied equally well to both existing and potential benefits, and may be so manipulated as to take account of anticipated changes in land use. As has already been suggested, estimates of this type may and frequently do include allowance for intangible special benefits.

The chief merits and demerits of the two major methods of measuring special benefits may be summarized as follows. The damages method fails to account for potential and intangible benefits; may include many damages which are not indices of benefits; is subject to exaggeration; introduces so many interpolations in making due allowance for flood frequency where infrequent flooding is assumed that there is abundant opportunity for error; is totally inadequate for evaluation of unoccupied or sparsely occupied areas capable of expansion under conditions of protection; is an unnecessarily rough measure for rural areas; is relatively easy to apply to urban areas; and is, in general, fairly well suited to extensive survey use. The differential method is better suited to evaluation of potential benefits; encounters strong obstacles in determining fair market and depreciation values in areas where flooding has been frequent; is subject to substantial errors

[27] C. A. Bock, *History of the Miami Flood Control Project* (Dayton: Miami Conservancy District, 1918), pp. 17-30.

[28] Flood Commission of Pittsburgh, *Report* (Pittsburgh: The Commission, 1912), pp. 15 and 65.

[29] For example see: 72d Congress, 1st Session, "Gasconade River, Mo.," House Document No. 192, p. 41.

[30] An outstanding example of detailed studies of farm costs and gross income in flooded areas is: Minnesota Department of Drainage and Waters, Adolph F. Meyer, "Prevention of Floods in Minnesota River Valley," *First Biennial Report of the Commissioner*, pp. 46-47 (1921).

One of the most intensive and discriminating uses of a similar technique, but employed for purposes of allocating cost in a drainage district is in: U.S. Department of Agriculture, Lewis A. Jones, Wells A. Hutchins, and G. R. Shier, *Plan of Rehabilitation for Little River Drainage District, Southeastern Missouri*, 1933, mimeographed.

of personal opinion when applied to urban areas where there has not been recent experience with heavy flooding; is admirably suited to intensive use in rural areas; and is well adapted to reconnaissance use in rural areas. Neither method offers a satisfactory solution to the problem of assigning value to the prevention of loss of human life. Finally, the differential method is capable of revealing areas in which particular types of occupance are not profitable irrespective of the existence of flood protection, whereas the damages method indicates in every instance a positive amount of benefits.

2. *Measurement of General Benefits.* The evaluation of those benefits accruing to a community or to a nation is complicated by their intangible nature, and by their widespread distribution. Even though it be admitted that a flood in one part of a city may have harmful effects on economic activity in other parts of the city, there are at present no accurate means for gauging the amount of those indirect effects.

The chief attempt at measurement which has been made to date consists of expressing the general benefits as a proportion of the special benefits, the proportion varying with the number of economic and social ties between the flooded area and outside areas. This measure was employed by the Miami Conservancy District,[31] which concluded that benefits accruing to the entire communities as units were equal to the total benefits to their citizens individually. Conclusions of this sort are supported by opinions as to the economic structure of the area under examination and at their best rely on local judgment which would be difficult to apply in other areas.

[31] "Appraisal of Flood Protection Benefits and Damages in the Miami Valley," *op. cit.*, p. 833.

It would seem practicable to make intensive studies of the actual amounts of general benefits in a few diverse and representative areas and in this fashion to devise a scale by which general benefits might be related to special benefits on the basis of the type and amount of economic activity in the area receiving special benefits. A scale constructed in this manner would not be complete and perfect. It would be arbitrary, but, if constructed with care, it might possess a smaller range of error than if opinion alone were utilized.

The Estimation of Costs

In estimating the costs of flood protection there are at least three points at which fundamental problems of estimation arise from the distinctive nature of protection works.

First, the costs of protection are in almost every project more far-reaching than those incurred in the construction of the works themselves. Channel contraction and levee works may impair the adequacy of protection works on the opposite bank or in lower reaches of the stream by increasing the height of flood flows. Estimates of the amount of damage caused by this means have been carefully evaluated and counted as cost in some few cases,[32] but, regardless of whether or not the states concerned follow the common-enemy or civil-law rules of surface waters, those consequences have been neglected in large measure. Matthes has pointed out that the construction of detention and storage reservoirs for flood control may also have profound influence on stream-flow conditions downstream by eliminating the flushing action of bankful discharges and by causing heavy scour, thus necessitating expenditures for dredging,

[32] 72d Congress, 1st Session, "Mississippi River below Cape Girardeau, Mo.," House Document No. 188, pp. 109-146.

sill dams, and other corrective measures.[33] Similarly, the elimination of silting in alluvial valleys has a detrimental effect on soil fertility which constitutes a real cost. It seems probable that the prevention of periodic silt deposition has cost the farmers in some flood plains in the United States far more than they have gained from the concomitant prevention of overflow. In practice, the above mentioned types of indirect costs have been computed by assuming them to be equal to the expenditures necessary to correct unsatisfactory conditions resulting from flood-protection works. Such computation is relatively easy for some projects, but in many instances measurement of the actual hydraulic or physiographic effect of a project is extremely difficult, even though there are theoretical grounds for believing that an effect exists.

Second, the summation of construction and operation and maintenance costs in order to obtain total cost is complicated in making due allowance for life of works. Cost is expressed in most "308" and other flood-control reports in terms of an indefinite investment period. For example, in the above-mentioned Missouri River bottomland estimates, "Operation and maintenance is capitalized at 5 percent and added to the construction cost to obtain the total cost."[34] The 5% interest rate appears to have been chosen solely because it was the current rate for drainage district and similar investments. In short, the view taken is that a flood-protection project will yield benefits for an indefinite period without respect to the length of time during which protection will be afforded. The life of protection works ranges from half a dozen years to a hundred years or more, depending upon the type and conditions of construction.[35] In some instances the foregoing procedure is modified by amortizing costs at the current interest rate,[36] but allowance rarely is made for depreciation. In almost all cases cost estimates contain no provision for theoretical amortization. Protection works do not, of course, yield actual monetary returns, but they do depreciate and become obsolete. The method of calculating total cost by adding construction cost to operation and maintenance costs capitalized at the current rate avoids consideration of life of works or of replacement. Under these circumstances whole groups of projects may be "feasible" or "not feasible" according to the particular interest rate adopted. The public policy here at stake is whether or not the cost of an undertaking yielding benefits difficult to predict should make allowance for amortization and depreciation.

Third, in cases where protection works can be utilized with or without modification so as to yield other benefits in addition to flood protection, the problem of allocating a fair share of the cost to each use is encountered. In view of the fact that the salient aspects of this question as it relates to sharing of costs among individuals and groups have been

[33] Gerard H. Matthes, "Floods and Their Economic Importance," *Transactions of the American Geophysical Union*, 1934, Part II, pp. 427-432.

[34] "Missouri River," *op. cit.*, p. 98.

[35] In general, reservoirs have a longer life, a larger construction cost, and a smaller annual operation and maintenance cost than do levees and channel improvement works. The manner of calculating total costs may therefore have a profound effect on the choice between alternative types of works, because in cases where the above relation holds the shorter the period of capitalization the smaller is the cost of levees by comparison with reservoirs, and the longer the period of capitalization the greater is the relative cost of levees.

The writer is indebted to Mr. Sherman W. Woodward for helpful criticism concerning the problem of calculating total cost.

[36] For example: 73d Congress, 1st Session, "Santee River, N. C. and S. C.," House Document No. 96, pp. 107-108.

discussed recently by H. M. Gray, it will not be treated here, other than to suggest that, even though it may not always be practicable to allocate total costs among beneficiaries, it may still be practicable and highly necessary in determining the feasibility of a multiple-purpose project to allocate costs among the several purposes.[37]

The Comparison of Benefits and Costs

In the general equation for feasibility in which benefit is the dividend, cost is the divisor, and unity in the quotient represents the minimum limit of economic justification, comparison of benefit and cost is subject to confusion at two points. First, difficulty is experienced in developing mutually consistent criteria for evaluating benefits and costs. Second, there is no generally accepted method of adjusting the time period for discounting benefits to the time period for capitalizing costs.

Flood-control technicians are giving an increasing amount of attention to the general benefits from flood protection. However, as more liberal criteria of benefits are applied, so also must equally liberal criteria of costs be taken into consideration if the weighing of the two is to be valid. It is no less important, for example, that injurious consequences of upsetting the physiographic balance in a drainage basin be evaluated, than it is that nation-wide economic effects of flood damage be measured correctly. When the point of view is strictly local, it is relatively easy to draw up two sets of criteria of the same type, but regional or national points of view carry with them many vague and illusive concepts which are especially susceptible to unbalanced application. Some criteria may be overemphasized, and others neglected entirely. It seems probable that not a few ill-advised flood-control projects have been termed justified only because general and special benefits were compared with purely special costs in total disregard for such general costs as those resulting from increase in volume of flood flows downstream or on the opposite bank.[38]

It has been pointed out in the section on measurement of benefits that the relationship between the time period for computing benefits and that for computing costs governs in large measure the final estimate of justification. The common practice in cases in which the damages method of discounting benefits is employed is to summate mean annual benefits for the same number of years used in capitalizing costs. This procedure was employed in the first two of the Missouri River bottomland estimates, cited above, in which the total benefits for 20 years were compared with the costs capitalized at 5%. In the third of those estimates the present value of all benefits during a 100-year flood cycle also was compared with costs capitalized at 5%. Somewhat similar technique was applied in making the Lehigh estimates previously noted.

As a hypothetical illustration of the problem involved, assume that a city is protected against all floods except the maximum one which probably will occur on the average of once in 100 years. Assume also that requisite protection works have a probable life of 20 years. The total amount of benefits to be derived from protection against the maximum flood having been estimated by the damages method, a question of judgment arises. The total might be divided by five in order to give total

[37] Horace M. Gray, "The Allocation of Joint Costs in Multiple-Purpose Hydro-electric Projects," 25 *American Economic Review* 224-235 (June, 1935).

[38] This is pointed out in: 73d Congress, 2d Session, "Yazoo River, Miss.," House Document No. 198, p. 49.

benefits for a 20-year period. It might be divided by four to give total benefits for a currently common 25-year investment period. It might be regarded as accruing at the end of 100 years, and its present value discounted on that basis. It might also be regarded as accruing during the first year after construction because the great flood *might* occur that year. Between these extremes of method there are, of course, innumerable variations, making possible a disconcerting range in magnitude of final results for any given set of estimates of benefits and costs.

A like diversity of bases for comparison is present in a less distinct form in cases where the differential method of measuring benefits is employed. Recent occurrence of a disastrous flood or the existence of a large hazard to human life may lead individuals and communities in a flooded area to regard total benefits as equivalent to those from the maximum probable flood, regardless of the life of the requisite protective works. Conversely, lack of recent flood experience may induce the affected interests to discount benefits as though they would accrue only in the remote future at the end of a hypothetical flood cycle.

Although there is slight excuse for the great number of methods of comparison employed, there appears to be justification for some variation in method according to the utilization of the flood plain in question. A farmer, in most cases, is concerned with protection from floods of 3- to 20-year frequency. A city dweller fears the great and less frequent floods, for those are the unexpected phenomena which cause havoc in urban areas having protection from floods of lesser magnitude. The ever present menace of a major catastrophe in a city, even though its chances of occurring are less than once in 100 years, may conceivably cause the inhabitants to consider protection in terms of preventing an imminent disaster. Fears of this type, however exaggerated from a long-range standpoint, may result in temporary if not permanent depreciation of land value and in suspension of building activity unless protective measures are adopted, and they therefore cannot be ignored.

The problem at stake is whether or not benefits should be discounted for the same period as that for which costs are capitalized.

Conclusions

The writer does not propose to offer here any solution to this or other problems indicated in the foregoing sections, nor is he aware of any comprehensive attempt to do so. He is concerned with pointing out that at the present writing there is no uniform method for estimating the limit of economic justification for flood protection among the various private and government agencies interested. An honest and competent technician, using the same basic data for a given protection scheme, can in a large number of cases conclude either that protection is justified, or that it is unjustified, depending upon the premises which are assumed at one or more of the several points at issue. The precise arithmetic ratios of benefits to costs in which estimates may be summarized do not reflect the rough approximations and arbitrary assumptions involved in arriving at those ratios. It seems probable that by taking one extreme conservative interpretation of the problems noted in the foregoing pages almost no additional flood protection could be shown to be justified, and that by taking an extreme liberal point of view it could be shown in number ratios that some protection is justified on almost every flood plain. The technician, lacking any

guiding policy, establishes premises at his own discretion, although it is rarely that a technical report states all the premises in lucid fashion.

Viewing the problem as a whole, two conclusions seem apparent.

First, recognition of the public policy assumed in an estimate of the limit of economic justification is essential to sound action by local, state, or federal interests considering any individual scheme for flood protection. This may be facilitated by clear description of the methods of estimation employed.

Second, uniformity of method of estimation is essential to the formulation of any regional or national program which requires comparison of a number of individual projects. In view of the large-scale federal programs now under consideration, a standard basis of appraisal is needed urgently.[39] This standard basis may be obtained by establishing criteria of benefits and costs, and a standard procedure for discounting benefits.

Summary

Notwithstanding heavy past and prospective public expenditures for flood-protection works, there is a marked lack of uniformity of methods for estimating the limit of justification for flood protection.

Certain methods now in use are wholly or in part unsatisfactory, in that they are inconsistent with basic premises adopted. For example, the damages method of estimating benefits may be used to evaluate items which do not represent benefits; the differential method may apply judgments founded on popular hysteria rather than on scientific knowledge of flood occurrence; and in a given method the criteria for appraising benefits may be inconsistent with those for estimating cost. They represent discrepancies of technique which, when present, may invalidate an entire estimate of justification, but which are capable of correction on logical grounds. They are, however, minor problems which may be eliminated in large measure by refinement of method.

The major problems of estimation arise from the laying down of those fundamental premises which involve broad public policy. Before any specific techniques of measurement can be employed, it is necessary to determine whether or not potential as well as existing benefits, and general as well as special benefits are to be taken into account. It also is necessary to establish the criteria by which costs are to be evaluated, to determine the time period for capitalizing costs, to allocate costs among several uses if the project has multiple use, and to determine the most sound basis for discounting future benefits in order to compare them with costs. There are no hard and fast rules for deciding any of these questions. They depend upon policy which must be approved, even though the approval be tacit, by the group contemplating the particular protection work under consideration.

In every estimate of justification assumptions concerning the above mentioned points are made, although too frequently they are not recognized clearly as being assumptions. In few estimates are they precisely the same. Standardization of procedure is to be desired, and it can come only as a consequence of agreement as to the nature of flood-protection benefits and costs, and the most effective means of discounting benefits.

[39] For example: *Projects for the development of rivers and harbors: summarized from reports by the Corps of Engineers to the Congress*, 1935 (mimeographed), lists 646 flood-control projects costing approximately $1,608-067,000. One hundred and eighty of these, costing approximately $1,197,414,000, would have multiple use. A ratio of total cost to benefit is given for each project.

Recent Trends in Utility Appliance Merchandising

By RICHARD A. HARVILL*

DURING the last four or five years few revolutionary developments have occurred in that controversial field, the merchandising of electric and gas appliances. A possible exception is the record of appliance sales. After marked declines in 1931 and 1932 sales figures for most domestic appliances showed appreciable increases in 1933, 1934, and 1935. Efforts of manufacturers, utility companies, dealers, and the TVA have resulted in reduced retail prices for appliances, low-cost financing of instalment purchases, and revised rate schedules for residential customers. These factors, together with intense cooperative promotional activity by utility companies and dealers, have stimulated increased consumer purchases of load-building appliances. Of the major appliances electric refrigerator sales have exhibited the most remarkable growth. Despite relatively low consumer buying power the number of domestic refrigerators sold increased from 965,000 in 1931 to 1,400,000 in 1934.[1]

With respect to utility merchandising activity in recent years certain fairly definite tendencies have emerged since the issues were more sharply defined in the clash between independent dealers and utility companies in 1931 and 1932. The following discussion will be confined largely to major trends in the opposition to utility appliance merchandising; dealer-utility cooperation; public control over utility merchandising; and the activities of the Federal Government as they affect the distribution and use of household appliances.

Opposition to Utility Appliance Merchandising

In a previous article the writer has described and analyzed in some detail the opposition of dealers to utility merchandising.[2] That article traced developments up to 1932. Consequently, the present discussion will be confined to the trends observable since that time.

The years 1931 and 1932 marked the climax in intensity of effort in the fight against utility merchandising. Following the traditions so characteristic of social and business groups during adverse business conditions, the antagonists turned to political methods for a solution of their alleged ills. Despairing of solace from courts in view of previous decisions sanctioning the power of utility companies to sell appliances[3] and placing no faith in commission regulation to right "wrongs," attempts were made to secure direct legislation prohibiting merchandising. With no dearth of professional politicians and agitators eager to fight the utility industry on any and all

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[1] Unit sales in 1932 fell slightly below the figures for 1931. Between five and six million of the 20 million wired homes now have an electric refrigerator. See 55 *Electrical Merchandising* 2-3 (January, 1936) for statistical summaries of annual electrical appliance sales for 1931 to 1934 inclusive. Sales figures for gas appliances are not available.

[2] Richard A. Harvill, "Opposition to Public Utility Appliance Merchandising", 8 *Journal of Land & Public Utility Economics* 287-300 (August, 1932).

[3] *Malone v. Lancaster*, 182 Pa. 309 (1897); *Baltimore Electrical Supply Company et al. v. Consolidated Gas Electric Light and Power Company*, Case No. 359 (1912); *Commonwealth of Pennsylvania ex. rel. Thomas J. Baldridge v. Philadelphia Electric Company*, 300 Pa. 577 (1930).

fronts, dealers carried their demands to practically every state legislature in the country. Financial contributions were received to maintain lobbies and distribute pamphlet and periodical literature as rich in invectives and villification as some war-time propaganda.

Anti-merchandising bills were introduced in legislatures of 15 states[4] in 1931 and in three states in 1932.[5] Passage of bills occurred only in two states, Kansas and Oklahoma.[6] By 1933 the opposition had lost much of its force and in 1934 and 1935 only scattering remnants of anti-merchandising activity remained. The legislatures of Arizona and Wisconsin alone appear to have entertained legislation in 1935 to prohibit utility merchandising.[7]

Several reasons may account for the waning of activity to the well-nigh dormant state. In the first place, dealers most bitterly opposed to utility merchandising in 1931 and 1932 were those most adversely affected by the pronounced business depression. Many doubtless failed to survive the liquidating forces of the depression and others, evidently convinced that utility practices did not constitute the sole source of their business ills, sought a more constructive solution. In the second place, dealers became discouraged when their political efforts produced such meager results. It seemed futile to continue making contributions from a dwindling income to defray costs of campaigns so uncertain in outcome. Professional agitators lost interest in the dealers' cause when monetary contributions ceased. At no time was the opposition able to match or surpass, either in money or in legal and business talent, the case presented by the utility industry. In the third place, executives of utility companies became acutely aware of the implications in widespread criticism of public utilities and resolved to substitute for antagonism the good will of dealers. This was sought by reiterating denials of intentions to secure appreciable sales volume if dealers would do the job and by liberal offers of active cooperation with dealers in selling appliances.

Dealer-Utility Cooperation

Although trade journals and the proceedings of trade associations in the utility industry have long contained much discussion concerning the importance of recognizing dealers as valuable sales allies, not until recently did the industry rather generally translate this point of view into concrete programs satisfactory to dealers. The pre-depression period witnessed many pronouncements affirming the intentions of the utilities to conform with ethical principles in merchandising appliances, but, with a few important exceptions, these pronouncements were scarcely more than gestures.[8]

[4] Ala., Calif., Fla., Ill., Ind., Iowa, Kansas, Mo., Nebr., Nevada, Okla., Penn., Tenn., Texas, and Wis.

[5] Mass., Miss., and N. Y.

[6] The Kansas act was declared unconstitutional by the Supreme Court of that State (see below). Utility companies in Oklahoma, fearing action on their part would jeopardize their chances to secure re-grants of franchises and other measures they valued more highly than the merchandising power, voluntarily withdrew from actual appliance selling and did not protest the constitutionality of the enactment.

[7] Both bills failed to pass.

[8] For over 30 years the utilities have talked about dealer cooperation. J. Robert Crouse presented definite plans to the Denver Convention of the N. E. L. A. in 1902 to organize manufacturers, wholesalers, contractors, and public service companies to further mutual interests. The Electrical Development Association was formed in New England in 1912 to stimulate local harmony among the elements of the electrical industry and a few local associations came into existence. In the same year representatives of the N. E. L. A., National Electrical Supply Jobbers Association, National Electrical Contractors Association, and Sons of Jove (organized in 1882 to foster friendly relations within the electrical industry) met and selected a com-

(*Footnote 8 continued on page 151*)

A rather complete survey of the available historical materials reveals that the utility industry has always been more concerned with cultivation of good will among dealers during depressions than at any other time. This is explained by the necessity of more intensive efforts to retain old load and add new load to the lines, and the fact that active dealer outlets for appliances assume an importance not so readily appreciated when business conditions are favorable. Other reasons account for the fact that at no time have utility companies regarded favorable dealer relations as more important than during the past five years.

Never before has the utility industry been subject to such onslaughts from so many different directions. Consumers of service have repeatedly demanded that prices of gas and electric service be reduced commensurately with reductions in other commodity prices and in individual incomes. The Federal Trade Commission completed its investigations of the utility industry begun in 1928 and published much of a damaging character. Federal action in establishing the Tennessee Valley Authority and the aggressive manner in which the National Administration has been urging passage of utility holding company legislation have aroused utility company executives to a serious realization that the time is most unpropitious to have the antagonism of appliance sellers. Consequently, in localities throughout the country, particularly in urban communities, agreements with various types of appliance dealers have been made. In a number of instances utility companies have withdrawn entirely from actual appliance selling and now confine their efforts to advertising and promotional activities. When they have not gone this far, they have usually endeavored to maintain cooperative plans whereby dealers are enabled to sell on the same terms as public service companies.

To achieve this degree of cooperation several policies have been necessary.[9] First, it was essential that utility company merchandising departments either cease granting excessive trade-in allowances and premiums or make possible the same allowances by dealers. Second, utility companies have extended free of charge to dealers the use of demonstration facilities and showrooms, supplied them with information and advertising materials, and borne the major portions of the costs of cooperative advertising campaigns. Frequent meetings of local members of cooperative groups, ordinarily called gas or electric "leagues" or "associations",[10] are held to exchange ideas, explain plans of the organizations, and at the same time stimulate dealers to greater effort and iron out difficulties. Third, public utilities have extended financial aid to dealers participating in cooperative schemes. To

(*Footnote 8 continued from page 150*)
mittee under the chairmanship of H. L. Doherty to draw up and promote a "National Cooperation Plan." The Committee incorporated the Society for Electrical Development which organized local electrical leagues throughout the country. (See 11 *Electrical Merchandising* 355-57 (1917)). Conferences were held and committees representing the groups concerned were appointed in both the gas and electrical industries in 1922, and in 1928 a series of ethical merchandising principles emanated from both the N. E. L. A. and the American Gas Association. Until about seven years ago the gas utility industry gave less attention to trade relations than the electrical utilities.

[9] Holding company organizations have often been the source of cooperative plans which are modified and adapted to meet any special conditions in areas served by the respective operating units.

[10] These organizations often include manufacturers and wholesalers as well as utility companies and retail dealers. The term "retail dealer" as used throughout this discussion includes plumbers and contractors who sell or install and service appliances. Many utility companies have ceased aggressive activity to secure installation and servicing jobs in communities where efficient contractors and plumbers are available.

dealers this probably seems the most significant element of aid granted them. No other practice of utility company merchandising departments aroused so much antagonism a few years ago as that of selling appliances on liberal instalment payment terms which dealers claimed they could not meet because of lack of financial resources. This source of irritation has been removed by agreements providing that the utility company stands ready to discount at a low rate the time payment paper taken by dealers from customers to whom sales have been made.[11] Of course, the utility company reserves the right to pass on the credit quality of the paper before assuming the obligation. Some dealers have made large use of this financing service, and even where actual use has been small, dealers have increased their volume of appliance sales beyond what they otherwise would have done because of the knowledge that the financial burden might be passed on if necessary. In return for furnishing these services utility companies are in a position to require that dealers handle only high grade appliances. That appliances sold should remain in use and keep customers satisfied is a matter of real concern to a gas or electric company.

An example of successful dealer-utility cooperation is that sponsored by the Central Hudson Gas and Electric Corporation. This Company withdrew from merchandising in December, 1930 to assist dealers in programs of promotion. The utility Company makes market surveys, displays dealers' products in its showrooms, furnishes a staff to assist dealers in selling and demonstrating appliances, provides newspaper advertising and window displays for dealers, and finances without recourse instalment sales made by dealers to customers whose credit is approved by the Company.

Regulation of Utility Appliance Merchandising

Questions pertaining to the legal status of utility appliance merchandising are answered by a study of state legislation and decisions of courts and regulatory commissions. The legal issues involved have related to the power of utility companies to sell appliances or, if permitted legally to sell, the proper accounting disposition of expenses and income derived from merchandise sales, and the appropriate treatment of property used by merchandising departments. Attention will be confined here largely to developments of the last three or four years.[12]

Power to Sell Appliances. When public utility companies were organized, express provision conferring the power to sell appliances was seldom included in the charters. Company executives assumed this power to be implied from the express power to sell gas or electricity. Courts and regulatory commissions have usually supported this view when the legality of merchandising was questioned. It was therefore natural for opponents of utility companies in 1931 and 1932 to seek legislation that would specifically prohibit appliance selling by utilities.

The result was prohibitory enactments in two states only, Kansas and Oklahoma. Eleven companies in Kansas brought proceedings to test the legality of the legislation chiefly on the grounds that the act constituted a deprivation of property without due process of law and

[11] In some instances the paper is taken "with recourse" (or endorsement); in other cases, "without recourse."

[12] For a survey of the legal status of utility merchandising to January 1, 1932, see Richard A. Harvill, "Regulation of Public Utility Appliance Merchandising," 8 *Journal of Land & Public Utility Economics* 74-86 (February, 1932).

was class legislation contrary to the Constitutions of the United States and Kansas. The attorney-general rested the State's case on the argument that utility companies, by making 80% to 90% of the appliance sales in Kansas, well-nigh possessed a complete monopoly and that statutory prohibition was justified under the police power of the State. The lower court found the facts substantially as presented by the State and accepted the State's argument, thereby upholding the constitutionality of the statute. Upon appeal by the utility companies the Kansas Supreme Court reversed the lower court, declaring the legislation unconstitutional.[13] The court admitted that figures indicated that the utility companies were doing 80% to 90% of the appliance sales volume, but declared that the police power could not be invoked "to protect one class of citizens against another class, unless such interference is for the real protection of society in general." To charges of monopoly the court answered:

"The evidence unmistakably shows the primary purpose of the appellants is to promote the sale of gas, and the ultimate fear of a monopoly is not well founded, because if a monopoly be acquired and prices be raised and quality diminished, the quantity of gas used by consumers will be reduced."[14]

Evidence presented convinced the court that the utilities sold and distributed appliances at reasonable prices, installed them without expense to customers, and made substantial allowances on old appliances taken back. In these practices the court could find nothing detrimental to the general welfare.

A Texas trial court in 1932 enjoined the San Antonio Public Service Company from engaging in appliance merchandising because such acts were beyond the corporate powers granted by the Company's charter and by statutory law.[15] The Court of Civil Appeals reversed the trial court[16] and the State appealed the case to the Court of Common Appeals,[17] which sustained the decision favorable to the utilities. The higher court argued that the sale of appliances directly promoted the sale of gas and electricity and constituted proper exercise of an implied power where losses were not sustained, when merchandising activities were not out of reasonable proportion to the capital invested and used in operating the utility business as a whole, and where merchandising was confined to territory served with gas and electricity.[18]

Two state commissions have recently found occasion to comment upon the legality of utility appliance merchandising. Upon complaint of private agencies against competition of public service companies engaged in selling appliances, the New York Commission pointed to the state law giving electric utility corporations express power to "make, sell, or lease all machines, instruments, apparatus and other equipment" necessary to the utilization of electricity sold by the corporation.[19] The Commission added: "It is desirable, however, that utilities should engage in merchandising only where it is necessary in order to provide for the introduction of appliances upon reasonable terms and to supplement what private agencies are doing."[20] When the ques-

[13] *Capitol Gas and Electric Company v. Boynton*, P. U. R. 1933 D 435.

[14] *Ibid.*

[15] *State of Texas v. San Antonio Public Service Corporation*, P. U. R. 1932 B 337.

[16] 62 S. W. (2d) 585 (1933).

[17] 69 S. W. (2d) 38; 3 P. U. R. (NS) 543 (1934).

[18] If all these conditions had not been fulfilled in the case at issue, the implication is that the court would have declared the merchandising acts illegal.

[19] Statutes in most states do not give these powers.

[20] *Luckey, Platt and Company of Poughkeepsie v. Central Hudson Gas and Electric Corporation*, P. U. R. 1932 B 165.

tion of the power of utilities to merchandise arose,[21] the Massachusetts Department of Public Utilities merely cited a decision[22] by the Board of Gas and Electric Light Commissioners in 1911, supporting the legality of utility merchandising.

Accounting for Merchandising Transactions. Questions relating to proper accounting procedure for utility merchandising operations have often arisen. The chief points of dispute have been whether merchandising expenses and revenues should properly be included in utility expenses and revenues and whether assets used in merchandising should be included in valuation figures upon which a reasonable return is computed.

Much difficulty and little success have been encountered in trying to define what constitutes a merchandising operation *per se* as distinguished from a utility activity designed directly to increase sales of gas and electricity. Utility companies have usually disclaimed interest in merchandise sales as such. The chief purpose of selling appliances has been increased use of gas and electric service. Costs incurred in selling appliances have been viewed by utility executives largely as a part of "promotional" or "new business" expense to be included in operating expenses and borne by ratepayers to the extent income from appliance sales failed to offset these expenses.

Allocation of certain indirect expenses between merchandise and new business accounts is not a matter of simple accounting formula. When such allocations are made, either voluntarily or as a requirement of a regulatory body, the procedure is necessarily somewhat arbitrary and capricious. Inasmuch as the financial amounts involved in merchandising and promotional activity are small in relation to the total cost of serving domestic customers, whatever practice is followed is not of serious consequence to domestic consumers as a group. Accounting practice may be important, however, in preventing discrimination where domestic customers use widely different numbers and kinds of appliances. Also in the matter of maintaining "fair" competition with independent appliance dealers some degree of "satisfactory" allocation of expenses between merchandising and promotion becomes significant. Dealers selling appliances entirely independently of utility companies may, it seems, with merit wish appliances sold by utility merchandising departments to bear substantially the same cost as if sold by self-supporting organizations doing virtually the same volume of business.[23]

Regulatory authorities have devoted more attention to policies and methods of accounting for utility merchandising operations during recent years. After the passage of a statute requiring segregation of merchandising and utility operating accounts and decreeing that no consideration be given merchandising expenses and revenues in the determination of rates, the Wisconsin Railroad Commission held hearings to determine the nature of merchandising expenses and appropriate methods for allocating expenses common to merchandising and utility operations.[24] The

[21] *Re Customers of Edison Illuminating Company of Boston*, 5 P. U. R. (NS) 369 (1934).

[22] 27 *Annual Report, Mass. B. G. & E. L. C.* 87.

[23] The financial results of utility merchandising are largely a function of the accounting procedure followed by each individual company. Accounting problems are simplified materially in the few cases where utility companies have organized separate corporations to perform the appliance merchandising function.

[24] Hearings before the Wisconsin R. R. Commission, U-3892, November 29, 1929, March 11, 1930.

Commission decided no formula or definite rule could establish specific procedure for allocating commercial expenses between promotion and merchandising. In a subsequent order the Commission merely specified the type of charges to make against merchandising expense and provided that indirect expenses should be charged to merchandising "to the extent" they were incurred for that purpose.[25]

Prompted by complaints of private agencies against competition of utilities, the New York Public Service Commission instituted hearings in 1931 concerning merchandising methods used by companies in that State.[26] Lacking sufficient evidence on the possibility of devising an accounting system to provide accurately for segregation of merchandising and utility expenses, the Commission refused to issue a general order to govern accounting procedure. Instead, steps were taken toward preparation of an accounting form to show complete costs of merchandising. After careful study of reporting methods of companies in New York the Commission declared the uniform system of accounts as followed in that State failed to show whether merchandising departments were earning profits or suffering losses. Orders were issued requiring gas and electric companies to keep accounts in a manner that would segregate from other transactions, and from each other, merchandising and jobbing operations and promotional operations.[27] Although the Commission stated a detailed list of merchandise income and merchandise and promotional expense items to include in reports to the Commission, it gave no criterion by which to allocate expenses between merchandising and promotion or new business. Furthermore, no ruling was made as to whether merchandising activities should be made self-sustaining. Failure to do this was recognition that companies situated under different circumstances would need to follow slightly different practices.

Accounting systems designed to give fuller and more detailed information on utility merchandising activities are being devised in New Hampshire and Washington. In the former State the Commission has declared the system of accounts endorsed by the National Association of Railroad and Utility Commissioners is inadequate. Companies have been ordered to subdivide operating accounts to permit thorough analysis of operations, including details of new business expense, jobbing work, appliance sales, taxes on merchandise stocks, rents and other expenses con-

[25] *Re Accounting for Merchandise Sales*, P. U. R. 1930 E 204. Since the date of this order, effective January 1, 1931, the Commission has had occasion to give instruction in answer to specific requests from companies regarding proper procedure to follow. Many of these requests and answers pertained to the treatment of advertising expense. Companies have been instructed to charge New Business Expense with the entire cost of advertising a utility service when no reference is made to appliances; to charge to merchandising expense the entire costs when advertising a particular make, or prices of various kinds of appliances, and when advertising a certain kind of appliance in preference to any other of the same general use; to charge to both New Business Expense and Merchandising Expense on an "equitable" basis, costs of advertising the merits of certain forms of utility service through the use of a certain kind of appliance mentioned. (E I-2, August 3, 1931.) Nothing more definite than the interpretations of the Wisconsin Commission has been said by commissions concerning allocation of indirect expenses of merchandising.

[26] *Luckey, Platt and Company v. Central Hudson Gas and Electric Corp., supra* n. 20.

[27] *Re Uniform System of Accounts for Electric and Gas Companies*, P. U. R. 1933 B 448. Interestingly enough, certain utility companies argued that the Commission had no power to prescribe an accounting system for merchandising operations on the ground that such activity was not a "utility" service, whereas in a previous case when the right of utilities to merchandise appliances was challenged the utility companies argued that appliance merchandising constituted a necessary and integral part of utility service.

nected with merchandising.[28] In compliance with a statute passed by the Washington Legislature in 1933,[29] the Department of Public Works is endeavoring to set up a new system of accounts to provide a segregation of utility and merchandising activities.

A check of decisions for the last five years[30] indicates that state commissioners, even in the absence of definite statutory instructions, usually refuse to permit inclusion of appliance merchandising and servicing expenses in costs of service. A characteristic justification for this attitude is well expressed by the Maryland Commission:

"The Commission can see no justification for charges for free wiring and installation and for rebuilding and replacing appliances. It seems that customers of the company who do not care to invest in electric ranges or refrigerators, or any other appliances, ought not to be called upon to help pay, in rates for electricity, for wiring, installation, rebuilding, and replacing such appliances of their neighbors. The amounts are therefore disallowed."[31]

Inclusion of losses on appliance sales in operating expenses was permitted by the Connecticut Commission because it conformed with requirements of the system of accounts prescribed by the Commission in that State.[32]

The Massachusetts Department, on the other hand, maintains that losses from merchandising may not be included in operating expenses.[32a] The Arizona Commission takes a middle-of-the-road position, permitting inclusion of merchandising income and expense in statements to the Commission for regulatory purposes, and also permitting inclusion in operating expense of losses from such operations if they are not excessive.[32b]

The New Hampshire Supreme Court reversed a Commission decision ordering the New Hampshire Gas and Electric Company and the Derry Electric Company to discontinue selling appliances for the Associated Appliance Corporation. Appliances were sold on a 2½% consignment basis, storage and display space were provided without charge, and all profits in excess of 2½% were remitted to the Appliance Corporation. The Commission claimed the operating utility companies had surrendered essential corporate power to other corporate utilities in violation of state law; the State Supreme Court did not deny the possibility of truth in the allegation, but declared this was a matter for other state authority to consider. The court stressed that the order of the Commission had no relevance to regulation of rates and service.[33]

When the Public Utilities Commission

[28] *Re Uniform Classification of Accounts for Electric Utilities*, D 1633, Order No. 2771, *Public Utilities Fortnightly*, January 31, 1935.

[29] § 8, Ch. 165. The laws require that merchandise revenues and expenses and assets be excluded in determining reasonable return.

The North Carolina Commission issued an order (U-3, January, 1934) requiring segregation (4 P. U. R. (NS) 557).

[30] For cases prior to January 1, 1932, see article referred to in note 12.

[31] *Re The Potomac Edison Company*, 7 P. U. R. (N. S.) 135 (1935). See also decision of the Arizona Corporation Commission in *City of Douglas v. Arizona Edison Company*, 1 P. U. R. (NS) 493 (1933); and *Re Columbus Gas and Fuel Company* (Ohio), P. U. R. 1933 A 337; *Re Customers of the Edison Electric Illuminating Company of Boston* (Mass.), 5 P. U. R. (NS) 369; *Re Commonwealth ex rel. Rosslyn Gas Company* (Va.), 3 P. U. R. (NS) 61. Losses from uncollectible merchandise accounts were not allowed by the Pennsylvania Commission in operating expenses in *Re Burgess and Town Council of Borough of Chambersburg, and Commercial Club of Chambersburg v. Chambersburg Gas Company*, P. U. R. 1930 D 317.

[32] *Mathias Speiss et al. v. Manchester Electric Company*, P. U. R. 1933 B 262. Where merchandise installation and repair costs were included in operating expense, revenues from merchandise sales were required to be included. (*Re Monhegan Water Company* (NS), P. U. R. 1933 B 1.)

[32a] *Customers v. Lowell Gas Light Co.* (Mass.), D.P.U. 4916 (1935).

[32b] *Re Central Arizona Power & Light Co.*, 9 P.U.R. (N.S.) 270 (1935). Excessiveness is measured after determining what would be spent if no merchandising were done.

[33] *New Hampshire v. New Hampshire Gas and Electric*

(Footnote 33 continued on page 157)

of Ohio ordered a rate reduction and cut down the amount allowed the West Ohio Gas Company for securing new business,[34] appeal was taken to the State Supreme Court which affirmed the Commission's action.[35] The utility company appealed the case to the United States Supreme Court and secured reversal of the State Supreme Court. In answer to the argument of the Commission that excessive new business expenses had been charged to operating costs the United States Supreme Court found the evidence did not substantiate the claim and refused to substitute its judgment for that of the company. Furthermore, the Court took specific cognizance of competition between gas and other fuels and the consequent necessity of incurring reasonable charges to foster normal business growth.[36] In view of this position, it would seem necessary for regulatory commissions either to allow whatever new business expense is claimed by utility companies or to set up definite standards by which to measure excessive expenditures. Elements to be compared in measuring such excess would include the amount spent for obtaining new business, additional load obtained measured in physical units as well as revenue units, and costs of rendering the additional service.

Cases involving valuation of utility property often present the question of whether merchandise assets and merchandise accounts receivable should be included in working capital. As a general rule, these items have been excluded.[37] This practice is required by law in Washington and Wisconsin.

Lamp Renewal Policy. The practice, so prevalent many years ago, of furnishing lamps to customers free of charge and including an energy charge for all current used on certain rate schedules, has been abandoned by almost all electric companies, either voluntarily or upon order of regulatory commissions. In 1932 the Illinois Supreme Court held the free lamp renewal practice discriminatory because customers using a large amount of current for purposes other than lighting paid sums in excess of the cost of lamps they used; and, further, the practice virtually gave the utility company a monopoly over lamp business, since customers were forced to pay extra lamp charges even though they actually purchased lamps from department stores or other places.[38] The Massachusetts Commission ordered the practice abandoned in 1934 on practically the same grounds.[39] This attitude appears quite sound. Free lamp renewals and energy charges for certain classes of customers may have been

(*Footnote 33 continued from page 156*)
Company, P. U. R. 1932 E 369. Several intercompany relations were at issue in this case.

The Broad River Power Company, an operating unit, incurred an expense of more than $30,000 on merchandising and jobbing under a contract to sell appliances on consignment for the Utility Appliance Corporation, a subsidiary of the Associated Gas and Electric Company of New York. The South Carolina Railroad Commission ruled that the sum must be deducted from operating expenses (*Re Broad River Power Company*, P. U. R. 1933 C 351).

[34] *Re Western Ohio Public Service Company*, P.U.R. 1931 D 1, 6.

[35] 128 Ohio 301 (1932).

[36] *West Ohio Gas Company v. Public Utilities Commission of Ohio*, 6 P. U. R. (NS) 449 (1935). The court referred to a similar decision of a lower federal court in *Consolidated Gas and Electric Company v. Newton*, 267 Fed. 231, P. U. R. 1920 F 483, 515. The Kansas Supreme Court in 1928 ruled that the Public Service Commission had erred in disallowing $66,000 of New Business expenses of a utility company. "The Commission is not the company's business manager. The Company has a business manager of its own, who must be allowed good-faith exercise of judgment, discretion and initiative." (*Wichita Gas Company v. Public Service Commission*, 126 Kansas 220; P. U. R. 1928D 225).

[37] *Department of Public Works of Washington v. Seattle Gas Company*, 3 P. U. R. (NS) 433 (1934); *Re Columbus (Ohio) Gas and Fuel Company*, P. U. R. 1933 A 337.

[38] *Consumers Sanitary Coffee and Butter Stores v. Illinois Commerce Commission*, 181 N. E. 411; P. U. R. 1932 D 26.

[39] *Re Customers of Edison Electric Illuminating Company of Boston*, 5 P. U. R. (NS) 369.

more equitable in earlier times when electricity was used almost wholly for lighting and when lamps were of poor or uneven quality, but today variation in number of appliances and extent of use clearly make the free lamp renewal policy inequitable as among different customers in the same rate class.[40]

Government Activity and Appliance Sales

In so far as policies of the National Administration may have resulted in larger consumer purchasing power, appliance manufacturers, retail dealers, and utility companies doubtless have shared in the benefits of increased business. More specifically measurable benefits have been derived from operations of the TVA and its subsidiary, the Electric Home and Farm Authority (EHFA), and the work of the Federal Housing Administration.

TVA and EHFA Policies. When the directors of TVA assumed their duties in 1933, they found a condition of near stalemate in the electrical business. Electric utilities claimed rates for electricity could not be materially decreased until use of electricity was greatly increased. More general use of electricity, they claimed, was dependent upon the price of appliances. Appliance manufacturers, on the other hand, urged that unless electric rates were reduced, volume production and sales of appliances would be impossible and without volume production and distribution, prices could not be substantially reduced.[41]

The directors of TVA resolved to escape the dilemma and stimulate greater use of electricity in the seven states of the Tennessee Valley by (1) providing homes with very low-cost, standard-quality appliances on terms favorable to persons of low incomes, and (2) concurrently effecting a downward revision of electric rates.

EHFA began operation in April, 1934. Although it has power under its articles of incorporation to manufacture, buy, and sell appliances in its own name, activity has so far been confined to financing customer purchases of appliances and educational efforts. Financing services are available on major appliances (ranges, refrigerators, water heaters, portable motors, and water pump motors) approved by EHFA and bearing the TVA emblem, showing that they are built to EHFA specification as to quality and design and that the retail price fixed by manufacturers is reasonably low. EHFA assumes the time payment paper taken by independent dealers and utility companies upon the sale of approved appliances. Maximum maturity of these obligations is three to four years depending upon the number of appliances bought by a customer. Instalment collections are made by utility companies through monthly service bills and transmitted to EHFA which has 10 million dollars, made available by the RFC for financing appliance purchases, and the rediscount facilities offered by banks.

As a condition of offering financing to dealers and utility companies, EHFA has required revision of rate structures along lines that will make the use of appliances practicable. "Objective" or "promotional" rate schedules offering very low rates for large use of electricity have been introduced successfully. Experience of the TVA with these forms of rates has stimulated experimentation in other areas.[42]

FHA and Appliance Selling. The

[40] *City of Milwaukee v. Milwaukee Elec. Rlwy. and Lt. Co.*, 2-U-434, decided June 15, 1935.

[41] Information Service, TVA, February 3, 1934.

[42] For discussion of "objective" and "promotional" rate plans, see F. A. Newton, "The Commonwealth and Southern Objective Rate Plan," 11 *Journal of Land & Public Utility Economics* 117 (May, 1935) and "New Rates for Domestic Electric Service," 2 *Edison Electric Institute Bulletin* 4 (1934); H. Zinder and W. E. Caine, "Bargain Sales of Electricity,"

Footnote continued on page 159)

Federal Housing Administration has made gas and electric appliances of a minimum sale price of $35 eligible for financing under its better housing program. Dealers or utility companies selling appliances on time to customers eligible under terms of the National Housing Act may pass the paper on to banks and receive immediate payment at a low discount rate. The Government guarantees 20% of the loan and the bank assumes the remaining risk without recourse to dealers. Terms of customers' payments include a minimum monthly payment of $3, with a minimum of 12 and a maximum of 36 months in which to make total payments.

Summary and Conclusions

Widespread opposition to utility appliance merchandising, so prevalent three or four years ago, has almost disappeared. Misunderstanding and bitterness have largely given way to dealer-utility cooperation designed to increase appliance sales volume to the mutual benefit of utilities and dealers. Demands that public service companies cease selling appliances are but unechoed cries compared to the concerted drives of 1931 and 1932. Utility companies have become alive to the benefits and requirements of favorable trade relations. Certain merchandising practices have been abandoned by many utility companies out of consideration for the wishes of dealers, and dealer-utility cooperative activity, generally initiated by utility companies, has extended to dealers the opportunities to sell appliances on terms similar to those offered by utility companies. Conditions upon which utilities have extended these opportunities have not been difficult for dealers to meet.

The controversy over utility merchandising was one of opposing business groups motivated by the desire for profits without much reference to the welfare of the public generally. Today, dealers and utilities are making cooperative assaults upon the sales resistance and pocketbooks of customers throughout the country. In this connection a certain word of caution is not amiss. Appliance sales in the future should be made on the basis of real need and service to the customer rather than for sheer increase in sales of appliances, or kilowatt hours of electricity and cubic feet of gas. There is danger of selling purses to persons who have no money to put in them. Contrary to the implication sometimes drawn from "saturation" figures compiled by trade journals and quoted so frequently by commercial managers of utility companies, every unwired home is not a candidate for wiring and every wired home is not a candidate for a refrigerator or a radio. Market analyses for appliances have seldom gone beyond the quantitative stage. Qualitative analyses should be made to determine the ability of each household served to afford appliances, and sales energy should be confined to those possessing the ability to pay. We are still suffering from overexpansion of instalment selling and buying which occurred before the "great change" of 1929 and subsequent years. Perhaps in a competitive business system it is too much to expect sellers of commodities and services to overlook the chance of immediate profits for the sake of other motives, especially in the absence of definite standards for judging customers' effective demands. Public service companies are in position to contribute

(*Footnote continued from page 158*)

Public Utilities Fortnightly, June 6, 1935, p. 690. See also *Re Alabama Power Co.*, 3 P. U. R. (NS) 355 (1933) and 4 P. U. R. (NS) 225 (1934); *Re Wisconsin Michigan Power Company*, 4 P. U. R. (NS) 276 (1934); *Re Wisconsin "Low-Cost" Rate Plan*, 2-U-810, Order to show cause, Jan. 26, 1935 and Intermediate Order, April 18, 1935.

most in this direction so far as the appliance market is concerned. The EHFA can do much by setting up minimum standards to govern the financing of appliance purchases. A reasonably secure annual gross income that exceeds by certain multiples, varying with the size of family and other circumstances, the annual payments on account of appliance purchases is suggested as one approach to a standard.

Specific results of TVA and EHFA activities are reduction in manufacturers' prices on appliances and production of models more suitable to the needs of people with small incomes, reduction in appliance distribution costs largely through relieving retailers of financial risks, and drastic reductions in rates and revamping of rate schedules to make practicable the use of major appliances. All these results have combined to produce the ends sought—namely, increased sales of appliances as well as electricity. Since the summer of 1933, sales figures for electricity in the regions served by TVA, particularly in Alabama, Tennessee, and Georgia (states of relatively low incomes) have exhibited the greatest increase of any area in the United States. Experimentation with revised rate structures has been undertaken in other localities and the EHFA is considering the possibilities of extending its financial services outside the Tennessee Valley area. With reduced rates for electric service and reasonably priced appliances sold on liberal instalment payment plans, electricity will probably be extended to areas and homes now without its use and used more intensively and for a greater variety of purposes in still other homes. At the present time the replacement market alone offers legitimate opportunities for volume sales of appliances at favorable prices.

Legal questions pertaining to utility appliance merchandising have been clarified somewhat during the past five years. That utility companies have the legal power to sell, install, and service appliances in the territory in which utility service is sold seems now well established. Such activity, although proper and incidental to the utility function, is not subject to direct regulation. Public service commissions have no power to fix prices at which appliances are sold, installed, and serviced. Systems of accounts may be required to show the results of merchandising separately from the results of utility operations. The general tendency among commissions is to disallow merchandising expenses in the costs of service to ratepayers. Conversely, merchandising revenues are not included in operating income. Much confusion exists as to what is the proper method of allocating certain commercial expenses between promotional or new business expense, to be borne by ratepayers, and merchandising expenses, to be borne by purchasers of appliances. Courts, including the United States Supreme Court, have clearly held this allocation to be a managerial function which the commissions cannot set aside except when the division is proved by factual evidence to be unreasonable. No definite standards of reasonableness have been set up either by courts or commissions. Oftentimes by accounting methods utility companies will show profits on merchandising operations and commissions make no inquiry regarding merchandising expenses and revenues. The chief concern of commissions in requiring some division of commercial expenses between merchandising and utility operations is to prevent discrimination between ratepayers who use different kinds and numbers of appliances.

Removing the Obstacles to Group Rehabilitation of Real Properties

By ARTHUR C. HOLDEN*

I

THOSE who are interested in the rehabilitation of blighted sections of American cities know that an effective method is needed which will permit property owners to act in concert to improve their properties in harmony with a general plan for the neighborhood. The blight of urban properties has long been regarded as the result of unrestrained and incoherent development of individual properties with overemphasis upon opportunism and exploitation to the neglect of the long-range point of view and sound economics.

While it is recognized that group action is essential to carry out an effective program for rehabilitation, there has as yet been no concerted effort to overcome the psychological, legal, and physical obstacles which have been preventing group action.

In the first place, it is important to stress the common interests rather than the conflicting interests of adjacent properties. This implies a concept of real estate based upon services derived therefrom rather than upon paper profits wrung from the active merchandising and turnover of real estate. It is necessary to recognize the inevitable chaos that is created when owners seek greater and greater use of their own property through the capture of patronage which might otherwise go to competing properties. With the advent of the automobile, congestion is no longer a likely escape from the consequences of depreciation and obsolescence. It is, therefore, a vital social concern to find a means to get rid of unfit housing and to remove the depreciating influence of unfit real estate in general.

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II. Obstacles Caused by Restrictive Procedure

Any practiced real estate man will warn against the attempt to get owners to act in concert, and will advise "buying them out." Too frequently do we forget that the high costs of buying are the result of the necessity for resolving the very same difficulties which bulk so large when cooperative group action is suggested. Where property is sold subject to a mortgage, the mortgage must always be reckoned with in planning for improvement of the property. Where the use value of the property has depreciated below the face value of the mortgage, the property cannot be taken over without discounting the mortgage.

Mortgagees at the present time, especially institutions and fiduciaries, are extremely sensitive to criticism. They therefore feel obligated to make the attempt to realize the highest price possible in disposing of the mortgages for which they are responsible. Accordingly, this class of lender is very loath to proceed except along well-tried lines of action. It is a routine matter to refuse to give satisfaction on a mortgage unless it is paid in full both as to principal and interest. It is also a routine matter to pass through the successive stages of rent assignments and foreclosure proceedings to the ownership of the prop-

erty. The usual institutional mortgagee prefers to take this course even though the expense involved is great and ultimate ownership of a single parcel may be of doubtful benefit. When all mortgagees pursue individual courses of action, little can be done to bring about a cooperative plan for neighborhood improvement.

There is a need today for action by state governments to grant wider freedom of action to institutional and fiduciary mortgagees which will permit them through group management and planning to participate in coordinated plans for improvement of depreciated areas. At the present time the divisions of individual property lines are more hampering because of the barriers raised by mortgage contracts and existing legal procedure than because of the actual physical barriers of brick walls. The most far-sighted step yet taken is an amendment to the banking act in New York State[1] which has set up two organizations known as the Savings Bank Trust Company and the Institutional Securities Corporation. These organizations are empowered to act as trustees for the composition of mortgages entrusted to them by member savings banks. The legislation falls short in that it did not specifically provide for neighborhood cooperation for rehabilitation of depreciated properties; nor did it permit cooperation with individual or institutional mortgagees other than savings banks. The Institutional Securities Corporation is at the present writing planning to form subordinate corporations to which it will assign title to certain properties acquired through mortgages deposited with it. Through these corporations it proposes to take further steps to acquire intervening properties so that adequate plottage may be assembled under a single control that will permit coordinated improvement or rebuilding.

Some difference of opinion still exists as to whether legislation enabling mortgagees as well as owners to take such forward steps should be based entirely upon voluntary cooperation or should carry with it the power to compel adherence to the plan of improvement by minority properties. A certificate of necessity issued by a court would of course be required before compulsion could be invoked. Procedure might originate through a petition from a public health officer, a large majority of property owners, or mortgagees or tenants, or the tax department of the municipality.

It is true that certain powers of compulsion already exist; for example, mortgagees may compel adherence to a plan of improvement where the specific mortgage is in default. In New York City, both the Building Department and the Tenement House Department have the legal power of compelling adherence to the building code and the Multiple Dwellings Law, even though the administrative set-up is inadequate to secure compliance.

A year ago a new paragraph was added to the Dwellings Law[2] permitting the granting of a two-year stay against routine conformity, provided the owners of the properties in question enter into binding agreements to transfer their properties to a corporation for the purpose of a coordinated neighborhood improvement. To date, owners have been reticent to put their properties together in the absence of a definite assurance that new credits would be

[1] Subdivision 14 was added to the Banking Laws by Chap. 255, Sec. 1 of 1934, amended by Chap. 687 of 1935.

[2] Sec. 1, Chap. 713 of 1929; Chap. 61-a of Consol. Laws amended by adding new Sec. 310.

forthcoming permitting them to improve and rebuild. In the opinion of the writer it would be advisable for the PWA Housing Division as well as institutional lenders to come forward with offers of financing in order to test the efficacy of the plan.

At the present time there is a need for exploratory work and research along the lines of reorganization. It is unfortunate that technical men, including architects, engineers, city planners, appraisers, and lawyers cannot be retained to work on the problem because the entities that need their services cannot come into existence until after the services are performed. Professional men have been accustomed to depend upon individual clients for assured compensation. Where it is in the public interest to create new types of group entities, it would be good public policy for advance credits to be extended from public moneys to permit the necessary exploratory work by professional men to go forward. Such credits could be reimbursed from the corporate funds of the group entities after they are formed.

Group enterprise is also hampered by antiquated methods of procedure which are imposed upon municipalities with respect to public improvements. The present law of condemnation is cumbersome in most of the states. Although it is possible to eliminate many of these difficulties by arranging for public dedication of private properties, difficulties are at once involved where it is desired to realign public streets and to give over to private use properties formerly used for public purposes. The City of Erie, Pennsylvania carried out a progressive experiment through an agreement between the city and private owners to deposit all properties with a trustee for remapping. The map was redrawn. The trustee than proceeded to dedicate the new streets to the city and gave a deed to each original owner for a parcel of property proportionately equivalent to his former holding along with new boundary lines and frontages.

It would be a far step in advance if the principle of pooling properties were specifically recognized at law and if municipalities were empowered, in cases where private property is taken, to make awards for damages to the group instead of to individual parcels. Thus damages instead of being dispersed to individual private owners and largely consumed in satisfying private claims could be applied as the nucleus of a group rehabilitation fund for reconstruction of private properties abutting upon the improvements. Were such a policy current, we would not see private properties abutting on public improvements, such as the Olive Street widening in St. Louis, held for speculation in an arrested state of development for a period after the improvement.

III. Psychological Obstacles

Owners of real estate are not necessarily psychologically disposed to do the reasonable thing. A good deal of lip service has been given to the idea of city planning and community planning. Many elaborate sets of maps have been made indicating improvements that could be made in the street pattern if municipalities could find the ways and means for acquiring property and making the proposed changes. Beautiful drawings are frequently made suggesting improvements to private properties abutting on public improvements. But only infrequently are plans for construction in terms of blocks and neighborhoods founded upon a sound economic basis.

The real estate mind entertains only an academic interest in such proposals. It is far better trained to respond to

and expect results from the speculative method. Beacon Hill in Boston was "brought back" after a period of decadence by the independent action of a great number of individuals who made improvements, convinced that the picturesque qualities of the Hill and its convenience made it a place where the so-called "best people" would want to live. These same tactics were pursued in numerous locations in New York City, the most successful operation being in the Sutton Place section where the movement was initiated by inducing one or two women of an unquestioned social position to do over some picturesque old houses overlooking the River. There is no doubt that this method produces results where conditions are ripe, but a more generally applicable method is essential to deal with the great bulk of depreciated properties.

The writer had some connection with the concerted attempt which was made to work out a plan of rehabilitation for New York's notorious Lower East Side. Harland Bartholomew was called in consultation from St. Louis to advise on drawing up a plan. There is perhaps no depreciated neighborhood in the world with respect to which more facts have been gathered, nor where the underlying situation has been more carefully analyzed. Knowledge, however, does not always provide the spark that assures action. It was the alertness of George Gove, Secretary of the New York State Board of Housing, that wrote into federal legislation in Mr. Hoover's administration the proviso that loans could be made by the Reconstruction Finance Corporation for the purpose of "slum clearance and low rental housing." It immediately appeared that the last obstacle to progress had been removed.

There was, however, no organized entity to which loans could be made. The real estate mind instinctively looked to a promoter—big enough to take over properties and proceed on a large scale. The State Board of Housing was empowered only to supervise. Property assembly appeared to be the major issue. Mindful of the evils of speculative profits, socially minded people demanded a body to which the State might delegate the powers of mandatory action. The New York City Housing Authority was incorporated as a result of special legislation in 1934. Immediately every holder of depreciated property in the blighted sections of New York was ready to offer his property *at a price* for a huge rehabilitation scheme. Cleveland and other western cities immediately copied the idea and there followed in various sections of the United States the clamor that local authorities should take over the job of rehabilitating blighted areas. But a controversy developed which brought about a deadlock. It was not unnatural for owners of the depreciated properties to seek to get as much as they could in order to recover past losses and to pay off both mortgage indebtedness and back taxes. On the other side, it was equally natural for local authorities responsible for dispensing public moneys and eager to provide homes for those of low income to demur at paying a high price for land. They were obliged to advocate subsidies in order to write down the high capital expenditure made necessary by the assembly of property and new construction.

In the resulting discussions the fact that the rehabilitation of blighted areas is fundamentally an economic problem was completely lost sight of. It is the blight of urban properties which has provoked the flight from the city of those who can afford to be choosers. It is blighted properties that are destroying their owners as well as those who live in

them and which have so threatened the stability of mortgage investments that institutional lenders have resisted all efforts to extend further credits. Notwithstanding this, property owners, mortgagees, tenants, and even city officials have for the past two years taken refuge in the hope that in some way or other the Federal Government would cut the Gordian knot and solve their problem for them. It is old real estate psychology that there are two safe courses of action: the first is to let a prodigal and perhaps reckless promoter take the risk; the second is to wait until things are so ripe that one can oneself afford to be prodigal. Until the illusion is dispelled that someone else can save the day, it is unlikely that owners of property in blighted sections will awake to the realization that they must work out their own salvation.

Such a conservative body as the National Association of Real Estate Boards has recognized the necessity for devising ways and means whereby property owners may act in groups to prevent neighborhood depreciation as well as to provide machinery for the improvement of depreciated neighborhoods. Tentative as are the Board's proposals, at least a beginning has been made in sketching a legal framework that will create an entity through which the owners in a neighborhood may act in concert. Discussion has been provoked in many of the principal cities as to the form which group action should take. Criticism of the proposal has been made on the ground that it would incr ase the complexity of local government and might tend to increase the tax burden. It would result in a reassessment of properties within an incorporated Home District and the city would pay back to the district a certain proportion of the taxes collected for the special services performed by the corporation in maintaining and improving the standards of the district.

The research work that has been done locally in Cleveland and in New York City and by the Real Property Inventories throughout the United States has stimulated analytical examination of existing real estate conditions. For the last four years various groups in New York have given active thought to specific obstacles in the way of group action. The experience of the Land Utilization Committee of the New York Building Congress has been especially illuminating. Analytic studies of the waste and drain upon real estate caused by cumbersome procedure and destructive competition from depreciated properties should do much to break down the psychological impedimenta to group action.

IV. The Dead Weight of Inertia

Let us turn for a moment to consider certain lost opportunities where group action would have provided the solution could it but have overcome the dead weight of inertia.

The vacant house on Summer Street had long been a matter of concern to the neighborhood. Since the death of the widow the ownership had passed out of town. Suddenly it was found to be rented to an undesirable family that began the accumulation of junk in the back yard. There was no zoning law to invoke for protection. Investigation divulged that the junk man was paying $30.00 a month rent whereas $500.00 repairs on the property would make it marketable at $60.00 a month. Twelve neighbors were asked to put up $50.00 apiece to make the repairs and pay for the moving expenses of the junk man. Upon the consent of the estate to use ⅓ of each month's rent to pay off the

loan, a general agreement was drawn up by the group restricting use of all abutting property to residential occupancy only. But it was never signed and the junk man continued to menace the neighborhood because several of the owners thought that if they tied themselves up in agreements they might miss a profitable sale for their property.

On Central Avenue the problem was very different. The fine old houses stood well back from the roadway amid ample shaded grounds. Out of what seemed to be a clear sky one the oldest residents received an offer from a national chain store which sought a business site strategically located between the older business section and the newer outlying residences. Naturally, the neighbors were horrified but the judgment of the chain store people was confirmed by an immediate offer from a gasoline sales organization for frontage cut from another old place. Of course, much talk about civic pride followed. The owners of the residential properties met and drew up an agreement not to sell for business purposes, contingent upon the owners in the existing business section entering into a covenant with them. The business owners seemed willing to do this to arrest the trend of business away from the center already devoted to trade. In order to be fair to all it was proposed to transfer the important business properties to a single corporation. Certain border properties were added to permit rebuilding and improvement of the store blocks and arranging for automobile parking space. The residential owners were asked to agree to dedicate a strip of frontage 20 feet wide to the municipality to be maintained as a buffer park. In consideration of what they gave up, each residential owner was to receive a stock interest in the business block to be determined by an impartial appraisal. Under the agreement disastrous competition was checked and replanning and replacement provided for in the business section and a valuable residential atmosphere was preserved, subsidized by the stabilized earnings of the business section. But the agreement was never ratified because, before the details could be worked out, someone in the residential section grew impatient and sold out for a high price, thus capitalizing a special advantage to himself and compelling all the other owners to wait for a high price and change of use, in order to win back the loss caused by the invasion of business into a quiet residential neighborhood.

Types of group action such as cited above have failed because it has not yet been possible, on the one hand, to visualize the advantages that are possible and because, on the other, little has been done to show how fair participation in both the advantages and responsibilities of group action may be assured. In this direction some progress has been made through the studies of the Land Utilization Committee in the depreciated neighborhoods of New York City.

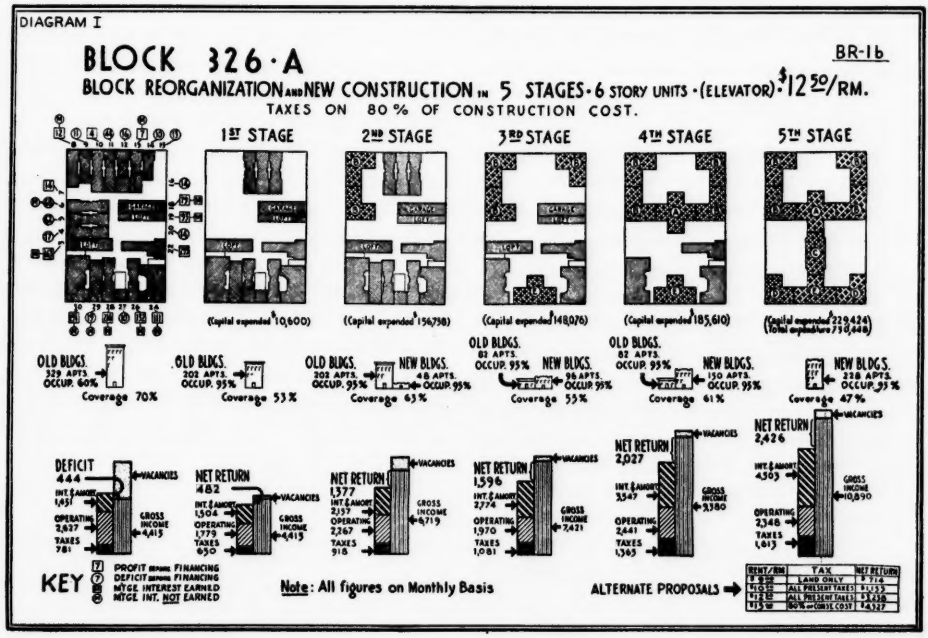
It is well to remember that no neighborhood is so depreciated that it does not include at least a few owners and perhaps several mortgagees whose position is especially favorable. The accompanying diagrams are interesting for the graphical method that has been used to familiarize owners with their relative position in the neighborhood economy and the advantages that may accrue from concerted action.

On New York's Lower East Side are many blocks where vacancies in the old apartments and rooming houses run as high as 30% per block. On Diagram I the figures with square symbols denote

a net gain; those within round symbols denote loss. The "M" within the square or circle indicates whether mortgage interest is earned or not. The bar graphs at the bottom show balance sheets for the block as a whole, through recommended progressive stages of pooling of equities; clearing of vacant or depreciated properties; and a gradual program of replacement commencing with the redevelopment of the land which has been cleared. Let us call to mind the helplessness of the owners of these properties who have deficits to face and no prospect of improvement because of the drag of the blighted condition of this whole section of the city. Here again hope of a solution lies only in joining to promote common interests which can be demonstrated to be more vital than possible conflicts of interest. When approximately ⅓ of a block is vacant it suggests that by a rearrangement of tenants every third building might be demolished without losing a dollar of rent. Such a rearrangement indicates that virtually ⅓ of taxes on improvements can be saved, and perhaps as much as ⅓ of maintenance charges. These savings result in a net saving upon the block as a whole. It is possible to work out a method whereby savings can be distributed equitably to owners and mortgage investors in the block.

By a contract which provides for each property to receive the equivalent of its present net earnings plus a share of the savings attributable to group management (the latter to be based upon an appraisal of all properties on a ratio basis), it can be made attractive to profitable properties as well as to properties in default to enter into group management or pooling agreements. Diagram II[3] has been prepared to illus-

[3] Differences in figures given are attributable to the fact that financing costs are not shown on Diagram II.



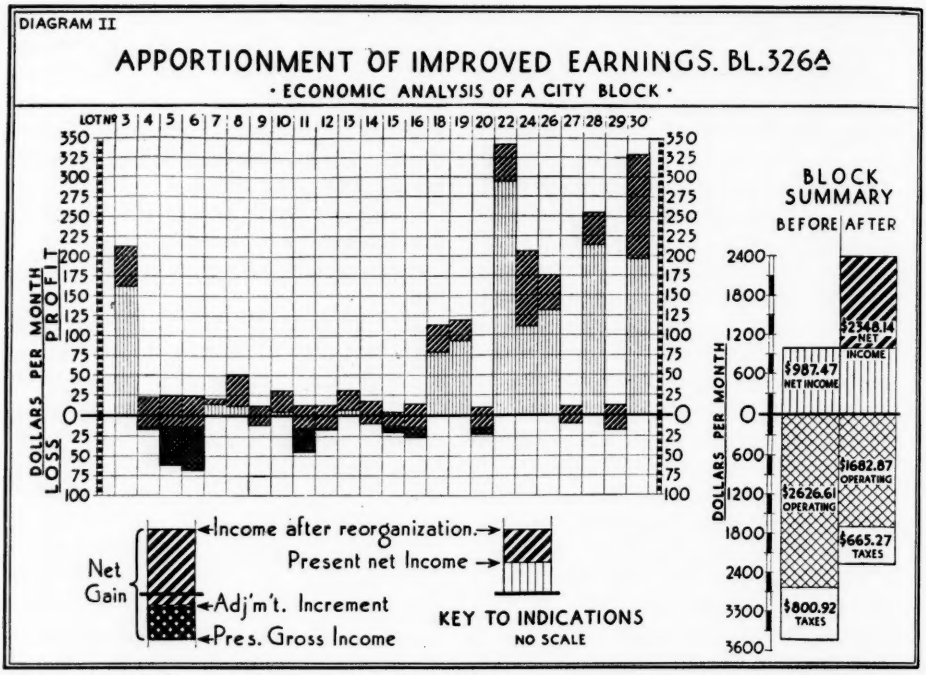


DIAGRAM II
APPORTIONMENT OF IMPROVED EARNINGS. BL.326
· ECONOMIC ANALYSIS OF A CITY BLOCK ·
LOT Nº 3 4 5 6 7 8 9 10 11 12 13 14 15 16 18 19 20 22 24 26 27 28 29 30
DOLLARS PER MONTH PROFIT
LOSS
350 325 300 275 250 225 200 175 150 125 100 75 50 25 0 25 50 75 100
Income after reorganization.
Present net Income
Net Gain
Adj'm't. Increment
Pres. Gross Income
KEY TO INDICATIONS
NO SCALE
BLOCK SUMMARY
BEFORE AFTER
DOLLARS PER MONTH
2400 1800 1200 600 0 600 1200 1800 2400 3300 3600
$987.47 NET INCOME
$2348.14 NET INCOME
$2626.61 OPERATING
$1682.87 OPERATING
$800.92 TAXES
$665.27 TAXES

Economic Housing Survey for Real Property Inventory (Project No. 33, Tenement House Dept.), Land Utilization Committee, New York Building Congress.

trate graphically the method for apportioning savings. It can be seen that all properties can be lifted above the line of zero earnings. Yet the greater share of the augmented earnings goes to the more valuable properties.

V. Governmental Attitude

Through the economies of group action, the waste of individual anarchy in real estate can be largely reduced and better facilities can be planned and provided for. Here is a concept which should enlist the sympathetic assistance and sanction of state governments. There should be a constructive moulding of the legal framework to recognize the neighborhood as an entity and to facilitate the making of contracts for neighborhood protection and homogeneous neighborhood development. The police power of the state may be invoked to assist and protect owners and others who enter into agreements for improvement and protection of their communities. At the present time, when so much attention has been concentrated upon governmental action, it is strange that there has been a tendency to overlook the responsibility of government to foster concerted action by individuals to secure advantages which are decidedly in the public interest.

Simplifying the Solution of Economic Problems Relating to Immediate versus Deferred Investment

By NEWTON O. BURNETT*

PROBLEMS frequently arise that call for a careful consideration of immediate expenditures as opposed to postponed investment, some of these problems being so complex as to require intensive study by outside specialists. Every problem of this character necessarily requires separate treatment and, even though it may possess some features in common with or similar to those of a previous study, cannot be handled in anything like a routine manner. On the other hand, many questions constantly appearing are much simpler in character, but nevertheless require individual consideration by management.

In view of the apparent simplicity of problems of the latter type, the departments entrusted with their solution are frequently requested to submit reports at very short notice, and under these conditions often resort to many approximations. Although certain approximations are generally in order, answers are sometimes greatly in error, or at best confusing or ambiguous, where improper assumptions have been made either as a result of haste or because of lack of data.

For these reasons it is highly desirable to develop definite methods of procedure for the rapid and accurate solution of certain types of economic problems, and the purpose of this paper is to present one such method and to demonstrate its effectiveness by a specific application.

Scope

The general run of immediate-versus-postponed-investment problems, which is the only type herein considered, can be divided into three distinct groups: (A) those problems in which it is simply a question of whether certain fixed capital construction should be done at the present time or should be postponed and done under different conditions; (B) those problems in which a complete fixed capital installation is made at the present time as opposed to equivalent construction installed in steps over a period of time; and (C) those problems in which a complete permanent fixed capital installation is made at the present time, as compared with the alternative of a temporary inexpensive system which is installed for a short period and replaced at the end of that period by a permanent installation.

Course of Procedure

General. The actual items that should be taken into account in solving problems of this character depend not only upon the nature of the problem itself, but also upon the personal points of view of the executives requesting the solution. That is to say, it may be deemed expedient or desirable to omit certain factors in one case that are highly important in another, and the selection of the proper items is largely a matter of individual opinion and interpretation. Then too, basic methods of procedure are themselves often the subject of controversy, as for example, whether in determining future worth certain annual charges should or should not be compounded, or whether the element of

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depreciation should be considered on the basis of an accumulating fund or should be treated in some other manner.

Regardless of the nature, however, of either the separate details of the problem or the general method of attack adopted, the object of any solution is to present the final data in such a way as to permit rapid review and prompt and accurate decision. It is believed that the course of procedure hereinafter described not only meets these requirements to a very satisfactory degree, but at the same time is sufficiently flexible, with proper adaptations, to cover a wide range of problems.

Basic Assumptions. The basic assumptions of the procedure presented here are:

1. All comparisons between two or more alternative propositions are to be based upon the respective present worths which will be derived directly from the future worths.

2. The future worth of any plan is to be considered as representing the sum total of all costs incurred during the period of comparison.

3. The costs are to comprise only the item of fixed charges and any unusual expense incurred as a result of the premature retirement of facilities. (Although omitted, maintenance charges could readily be included.)

4. All fixed capital construction is to be assumed to be financed from the sale of capital stock or from bonds that are to be refunded at maturity from new bond issues, thus creating a perpetual debt and eliminating the element of amortization of principal from the calculations. (As will be apparent hereinafter, however, the inclusion of a constant annual charge sufficient to effect complete amortization would complicate the problem only slightly.)

5. Fixed charges are to consist of the following items and are to be taken as a constant percentage of capital investment: (a) interest on the investment; (b) taxes; (c) insurance; and (d) retirement.

6. The item of retirement is to be treated from the standpoint of a depreciation fund which is built up from equal annual payments and which accumulates compound interest.

7. All items of fixed charge or expense are to be compounded annually to the end of the period of comparison and at the same interest rate as that taken for the return on the investment.

This compounding of charges is based upon the premise that any particular charge or expense must be met from revenue, and that if such charge or expense had not been incurred the equivalent amount of revenue could have been assumed to earn compound interest in determining its future worth.

Compounding of costs would appear to be the most equitable method to use when considering a problem from the standpoint of a holding company or similar ownership, where profits from a subsidiary may not be dissipated, but may instead be retained and perhaps reinvested in the business.

Basic Solution

Regardless of the time at which a particular installation is made, once the expenditure has taken place, the fixed charges will accumulate in accordance with the annuity equation,

Equation (1)

$$Y = A\left[\frac{(1+r)^n - 1}{r}\right]$$

Where Y = Cumulative sum of annual charges, or future worth

A = Annual charges

n = Total elapsed time

r = Annual interest rate

Utilizing Equation 1 to express the future worth of an immediate installation,

Equation (2)

$$Y = A_1\left[\frac{(1+r)^n - 1}{r}\right]$$

Where A_1 represents the annual charges on the complete investment.

Equation 2 is represented by Curve (A) in Figure I, the curve passing through the origin.

The future worth of a deferred installation can likewise be expressed by means of the general equation which is written in this case in the form,

Equation (3)

$$Y = A_2\left[\frac{(1+r)^{n-x} - 1}{r}\right]$$

Where A_2 represents the annual charges on the total deferred investment and differs from A_1 because of the different conditions under which the installation is made.

x represents the period of deferment.

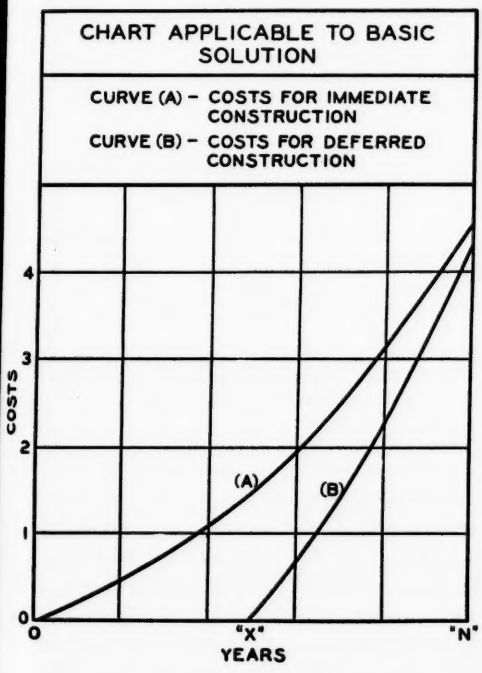

FIGURE I

Equation 3 is represented in Figure I by Curve (B) which, unlike Curve (A), does not pass through the origin, but starts instead at the "x"th year.

In many problems the equivalent deferred construction might require an appreciably greater investment than would immediate construction, and in those cases Curve (B) will then rise more rapidly than Curve (A). Under these conditions there will be certain cases in which the charges on the more expensive future installation will eventually become equal to and then exceed those on the present cheaper installation, regardless of the period of deferment. In order to reduce all problems to a practical working basis, therefore, a limitation should be put upon the value of "n" which is the total period of comparison. With this limitation made, it is evident that there will be one value of "x" for each given value of "n" for which the future worths of the alternative plans will be equal. This so-called critical value of "x" will be seen to be the basic factor in all the following solutions.

General Solution of Problems in Groups "A," "B" and "C"

The percentages to be used in computing the fixed charges in any particular problem depend upon many factors, some of which are very controversial in character. For this reason, it was decided to omit from the present paper all reference to the breakdown of such items. It will be stated here, however, that an overall charge of 12.5% on the investment was assumed for all construction except the temporary installation, the total fixed charge rate on that

item being slightly greater because of the assumption of a somewhat higher retirement rate in that particular case.

Group "A": Complete Immediate Installation vs. Deferred Identical Construction

Problem: Given A_1 and A_2 which are obtained as direct percentages of the respective investments, it is required to find the critical value of "x".

As indicated in the preceding section, the critical value of "x" occurs where the future worths of the two plans are equal, and this relationship is satisfied by equating to each other the right-hand members of Equations 2 and 3 or,

$$A_1\left[\frac{(1+r)^n-1}{r}\right] = A_2\left[\frac{(1+r)^{n-x}-1}{r}\right]$$

Simplifying,

Equation (4)

$$\frac{A_1}{A_2} = \left[\frac{(1+r)^{n-x}-1}{(1+r)^n-1}\right]$$

It is evident from Equation 4 that for a given value of "n," "x" can be determined for various values of the ratio A_1/A_2. Curves can then be plotted between the ratio A_1/A_2 as ordinates and critical values of "x" as abscissas for several different values of "n," as indicated in Figure II.

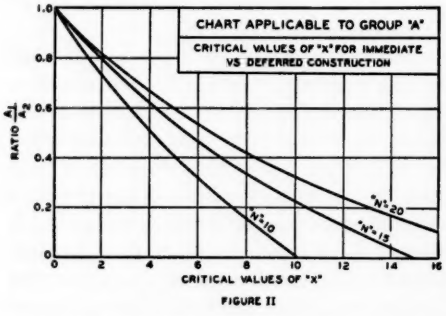

FIGURE II

Since A_1 and A_2 are directly proportional to the corresponding investments, it is usually sufficient to know the installation costs and period of comparison, in order to find at once the critical value of "x," or the period of deferment, below which immediate construction is economically justified; above which, indefinite postponement is advisable. It may be found in certain cases, however, that the percentages for fixed annual charges are different for the alternative plans, and under those conditions it will be necessary to compute the actual values of A_1 and A_2.

Group "B": Complete Immediate Installation vs. Equivalent Sequential Construction in Two Steps

In these problems, it is assumed that the first step of the sequential installation will be required immediately and that the second step will follow at the expiration of "x" years.

The future worth of the first step can then be expressed as,

$$A_3 = \left[\frac{(1+r)^n-1}{r}\right]$$

Where A_3 = Annual charges on first part of sequential investment.

And the future worth of the second step will be,

$$A_4 = \left[\frac{(1+r)^{n-x}-1}{r}\right]$$

Where A_4 = Annual charges on final part of sequential installation.

The complete immediate installation will be represented as before by A_1.

Problem: Given A_1, A_3, A_4 and "n," it is required to find the critical value of "x".

As in Group "A", the critical value of "x" occurs when the future worths of the two plans are equal at the end of "n" years, this condition being satisfied by the following equation:

Equation (5)

$$A_1\left[\frac{(1+r)^n-1}{r}\right]=A_3\left[\frac{(1+r)^n-1}{r}\right]+A_4\left[\frac{(1+r)^{n-x}-1}{r}\right]$$

Transposing and simplifying,

Equation (6)

$$\frac{A_1-A_3}{A_4}=\frac{(1+r)^{n-x}-1}{(1+r)^n-1}$$

It is seen at once that Equation 6 is analogous to Equation 4, and curves can therefore be drawn between the ratio $(A_1-A_3)/A_4$ and "x" for various values of "n," as given in Figure III.

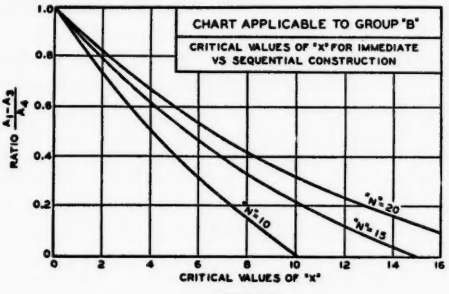

FIGURE III

The critical value of "x" is read directly from the curve and if it is felt that the complete system will be needed within that time, the entire installation should be made immediately; otherwise, only the first portion of the sequential construction should be installed at present and the remainder postponed indefinitely.

Group "C": Complete Immediate Installation vs. Inexpensive Temporary Construction with Subsequent Replacement by Permanent Installation

General. In these problems it is assumed that the temporary installation will be required immediately and that its replacement by permanent facilities will occur at the expiration of "x" years.

It is to be noted that the premature removal of the temporary construction before the expiration of its useful life will result in a deficiency in the retirement fund, this deficiency representing the unrecovered investment as of the date of dismantling (salvage being assumed to pay for removal costs).

There are numerous ways in which this deficiency can be taken into account, but one of the most satisfactory methods would seem to consist in setting up a sinking fund one year after the removal of the temporary installation, and making equal annual end-of-the-year payments to this fund at such a rate as to absorb completely the deficiency in the retirement fund during the life of the final permanent installation. It can be seen that this method places the full responsibility for premature removal of the temporary installation directly upon the installation replacing it.

It should be noted that interest charges on the temporary installation do not cease with its removal, but continue thereafter indefinitely as interest that must be paid, this assumption being consistent with the basic premise of perpetual debt. On the other hand, taxes, insurance, and retirement charges all naturally come to an end with the dismantling of facilities.

Temporary Installation. The future worth of the temporary installation itself can now be expressed as,

$$A_5\left[\frac{(1+r)^x-1}{r}\right](1+r)^{n-x}+rI_5\left[\frac{(1+r)^{n-x}-1}{r}\right]$$

Where I_5 = Investment in the temporary installation

A_5 = Annual charges on the temporary installation.

Retirement Fund. The amount

accumulated in the retirement fund at the end of "x" years will be

$$I_5 d_5 \left[\frac{(1+r)^x - 1}{r}\right]$$

Where d_5 = Retirement rate based upon the normal life of the temporary installation if it were allowed to remain in service.

Since the item "d_5" has already been taken into account for the entire period of comparison, as a component of the total annual charges A_5, the only purpose of considering the retirement fund is to establish the amount of unrecovered investment that must be provided for by the sinking fund.

Unrecovered Investment. The value of the unrecovered investment at date of removal of the temporary installation will be,

Equation (7)

$$E = I_5 - I_5 d_5 \left[\frac{(1+r)^x - 1}{r}\right]$$

Where E = Unrecovered investment.

Sinking Fund. The future worth of the sinking fund required to account for the premature removal of the temporary installation will be,

$$kE \left[\frac{(1+r)^{n-x} - 1}{r}\right]$$

Where k = Constant annual payment rate to the sinking fund during the life of the permanent installation, and can therefore be assumed equal in value to the regular retirement rate.

Final Permanent Installation. The future worth of the final permanent installation will be,

$$A_6 \left[\frac{(1+r)^{n-x} - 1}{r}\right]$$

Where A_6 = Annual charges on the final permanent installation.

Immediate Installation. The future worth of the complete immediate installation will be, as before,

$$A_1 \left[\frac{(1+r)^n - 1}{r}\right]$$

Complete Future Worth of Sequential Installation. The future worth of the sequential installation can now be written,

$$A_5\left[\frac{(1+r)^x - 1}{r}\right]\left[(1+r)^{n-x}\right] + rI_5\left[\frac{(1+r)^{n-x} - 1}{r}\right] + k\left[I_5 - I_5 d_5 \left[\frac{(1+r)^x - 1}{r}\right]\right] \cdot \left[\frac{(1+r)^{n-x} - 1}{r}\right] + A_6\left[\frac{(1+r)^{n-x} - 1}{r}\right]$$

But $A_5 = I_5 q_5$ or $I_5 = A_5/q_5$

Where q_5 = Total fixed charge rate on I_5, including retirement component "d_5".

Substitution should now be made for I_5 and the terms rearranged to segregate all A_5 items.

Problem: Given A_1, A_5, A_6 and "n," it is required to find the critical value of "x".

As in the similar preceding cases, it is first necessary to equate the future worths of the immediate and sequential installations. This done, both sides of the equation are divided through by A_6, thus creating in certain terms the ratios A_1/A_6 and A_5/A_6. Then the curves in Figure IV can be plotted, giving

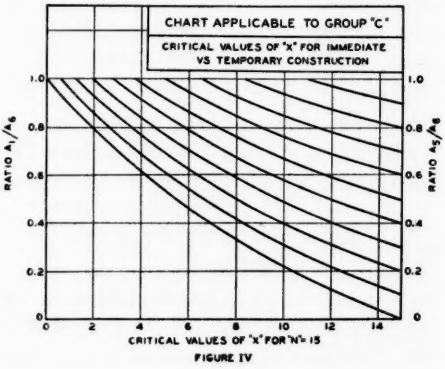

FIGURE IV

critical values of "x" for different values of the two ratios A_1/A_6 and A_5/A_6, and for the given value of "n".

It should be noted that since the temporary installation I_5 is by its very nature lower in cost than the final installation which replaces it, the ratio A_5/A_6 can never exceed 1.0 in actual practice.

Application of Curves to a Typical Problem

Problem. The management of an electric utility company serving an area subject to rapid load growth must make frequent decisions regarding the advisability of general installation work in advance of street paving operations, where such installation is made with the express purpose of avoiding the high costs incident to destruction and replacement of pavement.

In this connection let us consider the simple matter of underground duct construction intended for the installation of low voltage distribution mains, but which will not be actually utilized for this service for some time to come. It is learned that the permanent paving of a particular street is to take place within a relatively short time, and it is desired to know whether the duct construction should be installed immediately in the dirt street or should be postponed until actually required and then probably installed in a paved surface at a relatively much higher cost.

Solution. This problem falls under Group "A" and is solved by means of the curves in Figure II. Assume the relative costs of the duct construction in dirt and pavement to be 1 and 2.5, respectively. The corresponding annual charges will have the same relationship which, reduced to the ratio A_1/A_2, is 0.40. If it is now assumed that 15 years is a fair period of comparison, then the 15-year curve in Figure II gives a critical value of "x" of 6.9, or approximately 7 years. It is then only necessary to decide whether the construction in question will be needed inside of 7 years. If the answer is in the affirmative, the ducts should be installed at once; otherwise, indefinite postponement is advisable.

If the comparison is restricted to a 10-year period, the critical value of "x" is 5 years, and for a 20-year period the critical value would be 8.3 years.

Conclusions

Relative Accuracy of Assumptions. Once the basic method of determining future worths has been decided upon, the only assumptions that are necessary in solving the three types of problems herein discussed relate to normal life expectancies and to the unit costs of future construction. Life expectancies can certainly be determined with sufficient accuracy for use in long range economic comparisons, but future unit costs are, within certain limits, merely a matter of conjecture. In fact, it is quite evident that in a comparison extending over a long period of time and involving construction either at the end of or during that period, future deviations from the costs now used and changes in company policies might more than offset the apparent economic advantage of one installation over another.

Additional curves should therefore be drawn to show the percentage effect upon the critical value of "x" of given percentage deviations from present known costs. Such curves are given for Group "A" in Figure V. It is to be noted that these curves apply to any problem in that classification, since variations in A_2 merely affect the ratio A_1/A_2 and are in no way dependent upon any definite costs. Marked decreases in cost can

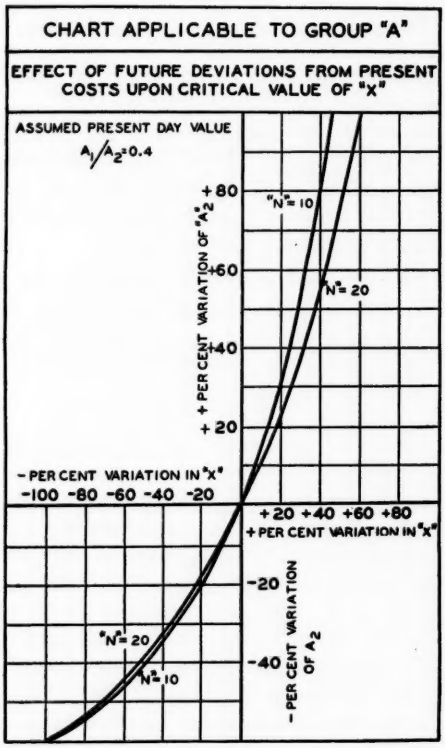

FIGURE V

scarcely be looked for inside of any reasonable period of "x" years, since all signs now point to substantially higher and permanent material prices and wage levels. Furthermore, since increases in future costs result in increasing the critical value of "x," those values of "x" found for present-day costs are on the conservative side.

Further Possibilities of Basic Solution. Although the general solutions treated in this paper deal with sequential construction restricted purposely to only two steps, it is believed that in certain instances problems of three or more steps could be solved in a similar manner. The equations required in those cases, however, would soon become decidedly unwieldy, because of the additional variables introduced, and various limiting assumptions would probably be found necessary.

Standardization of Problems Makes for Accurate and Rapid Solution. The standardizing effect of the basic method of solution is very apparent, regardless of the problem to which it is applied. Even though many complexities may be introduced in preparing the equations, the simplicity of the curves themselves will enable almost anyone after a little practice to obtain an accurate and rapid solution of a particular problem.

Supplementary Farming Homesteads in Recent German Land Settlement

By ERICH KRAEMER*

IN THE field of German land settlement a strong movement for the creation of supplementary farming homesteads[1] is under way at the present time. This movement is as important as current efforts to establish new peasant farms.

Supplementary farming homesteads have, in general, five characteristics: (1) Farming on the holdings is carried out by the homesteaders as a side-line activity for the purpose of supplementing the receipts they draw from their main occupation or principal source of income. (2) The agricultural land of the homesteads is not sufficient to sustain a family. (3) Agricultural production is primarily, if not exclusively, for home consumption. (4) The holdings are located on the periphery of large cities and industrial centers, around middle-sized towns, as well as in the open country. (5) The agricultural land of the homesteads is either directly attached to the dwellings of the homesteaders or located, wholly or in part, nearby.

As in other countries, such homesteads are not new in Germany. They have been in existence for a long time and have grown up in close connection with the advancement of urbanization and industrialization. Their operators include agricultural laborers, tradesmen, persons engaged in home-industry, workers in industries concerned with the processing of agricultural products, mining workers, railroad workers, road workers, inn-keepers, and workers in other industries situated in rural or semi-rural districts.

In 1933 Germany had over three million supplementary farming homesteads, representing the overwhelming majority of the approximately 3,300,000 establishments which the Census of that year reported as falling in the category of holdings ranging from ¼ to 12½ acres. Table I shows the number and percent of German holdings of this size group and their number per 1,000 inhabitants for the various states and Prussian provinces, as well as the size of the political divisions.

According to these data Schaumburg-Lippe, Lippe, Hohenzollern, Braunschweig, Mecklenburg, Wuerttemberg, Baden, Hessen, Oldenburg, Hessen-Nassau and Hanover have the largest number of holdings per 1,000 inhabitants.[2] Hanover, Wuerttemberg, Hessen-Nassau, and Baden have a large absolute number of holdings as well as a high rate of holdings in relation to their population. They are those areas of

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[1] In the United States holdings of this type are usually called "subsistence homesteads," "suburban holdings," or "part-time farms." None of these terms is used here, partly because of the considerable amount of confusion which has developed over these terms and partly because, in the opinion of the writer, the new term describes more accurately this particular type of settlement. The common German designation for supplementary farming homesteads is "Kleinsiedlung."

[2] Of these areas Hohenzollern, Mecklenburg, and Oldenburg fall in the category of states in which from 30 to 50% of the population are connected with agriculture and forestry. The other divisions are more industrialized areas having populations of which from 70 to 81% are connected with occupations other than agriculture and forestry.

Germany in which supplementary farming homesteads have reached their greatest development and in which the portions of the population in occupations of a non-agricultural and non-forestry character are 70.3%, 72.4%, 78.8%, and 74.9%, respectively. Some of the most industrialized and most densely populated areas of Germany, such as Saxony (State), Rhineland, Westphalia, and Upper Silesia, have likewise a large absolute number of such holdings. However, their rate of holdings per 1,000 inhabitants is much lower than that of the other areas mentioned.

By a series of measures, started in 1931 under the administration of Bruening and continued under von Papen and von Schleicher as well as under the present National Socialist regime, the German National Government has recently made great efforts to promote the creation of supplementary farming homesteads for the benefit of industrial workers. Private industry has likewise manifested great interest in this matter in the course of the last few years.

These developments have some interesting precedents. Long before the world war Prussia and other German states included the creation of supplementary farming homesteads in their

TABLE I. NUMBER AND PERCENT OF HOLDINGS RANGING FROM 0.25 TO 12.4 ACRES, NUMBER OF THESE HOLDINGS PER 1,000 INHABITANTS, BY STATES AND PROVINCES, TOGETHER WITH DATA ON AREA OF POLITICAL DIVISIONS, IN GERMANY, 1933.*

States and Provinces	Area of States and Provinces in Square Kilometers	Holdings		Number of Holdings per 1,000 Inhabitants
		Number	Percent	
Germany	468,779.74	3,356,162	100.0%	51.5
Prussia	292,771.71	1,966,406	58.6	49.3
East Prussia	36,991.93	124,137	3.7	53.2
City of Berlin	883.52	46,687	1.4	11.0
Brandenburg	39,038.50	187,550	5.6	68.8
Pomerania	30,268.79	103,132	3.1	53.7
Posen-West Prussia	7,714.28	20,795	.6	61.5
Lower Silesia	26,599.62	132,707	4.0	41.4
Upper Silesia	9,713.55	81,913	2.4	55.3
Saxony	25,527.40	229,886	6.8	67.6
Schleswig-Holstein	15,072.22	80,196	2.4	50.4
Hanover	38,787.00	253,594	7.6	75.5
Westphalia	20,214.46	215,906	6.5	42.8
Hessen-Nassau	16,844.73	195,680	5.8	75.8
Rhineland	23,973.46	286,515	8.5	37.6
Hohenzollern	1,142.25	7,708	.2	105.6
Bavaria	75,996.48	368,685	11.0	48.0
Saxony	14,986.31	134,489	4.0	25.9
Wuerttemberg	19,507.63	224,940	6.7	83.4
Baden	15,070.31	194,980	5.8	80.8
Thuringia	11,762.73	120,266	3.6	72.4
Hessen	7,692.01	113,721	3.4	79.7
Hamburg	414.92	12,903	.4	10.6
Mecklenburg	16,056.42	68,364	2.0	84.9
Oldenburg	6,423.98	44,055	1.3	76.8
Braunschweig	3,672.05	45,685	1.4	89.1
Bremen	257.70	4,457	.1	12.0
Anhalt	2,314.32	23,322	.7	64.1
Lippe	1,215.16	22,134	.7	125.8
Luebeck	297.71	3,719	.1	27.3
Schaumburg-Lippe	340.30	8,036	.2	160.7

* Census of Germany of 1933.

land-settlement programs. The Prussian State Government established or encouraged a certain amount of such holdings under the Settlement Act of 1886 for Posen and West Prussia and the Rent Holdings Acts of 1890 and 1891, although these acts were primarily designed to create peasant holdings.

Other precedents of organized action in this field are a number of land-settlement schemes fostered or carried out by several industrial enterprises and private persons in the 70's and 80's of the last century and led by such men as Alfred Krupp and v. Bodelschwingh. The Krupp Iron and Steel Works of Essen built a colony of dwellings of the supplementary farming homestead type in the first half of the 1870's and v. Bodelschwingh led the creation of such a colony in the neighborhood of Bielefeld in the second half of the 1880's.

Still another group of precedents are the efforts of public agencies and private industry following the world war. These include promotion of such holdings on the part of the National Government under the Land Settlement Act of 1919 as well as under the National Homestead Act of 1920 and certain settlement projects undertaken by a number of industrial concerns.

Reasons for More Homesteads

The arguments which have been advanced in favor of creating more supplementary farming homesteads for industrial workers are in many respects similar to those which have generally been set forth in behalf of peasant-farm settlement. They refer to many important problems of the life of the German nation and may be conveniently grouped into those of biological, socio-economic, cultural, and national-political character.

Important among the biological arguments has been the considerable decline in the birth rate during the last few decades. In the 1870's the annual number of births per 1,000 inhabitants was 40.0. In 1933 it amounted to only 14.7. The large cities have been leading in this downward movement of the birthrate (Table II). Having dropped to as low as 14.7 in 1933 the reproduction rate of the German people reached a point where it was about 30% too low to maintain the present size of population. This decline has, therefore, been viewed with great alarm. The rural birth rate has also declined, but

TABLE II. NUMBER OF BIRTHS PER 1,000 INHABITANTS IN GERMANY, AND SPECIFIED DISTRICTS, 1925-1934.*

Year	Germany	Places with more than 100,000 Inhabitants	Berlin	Places with 50-100,000 Inhabitants	Places with 30-50,000 Inhabitants	Places with 15-30,000 Inhabitants	Districts with less than 15,000 Inhabitants
1925.....	20.7	14.9	11.2	17.7	18.1	18.3	24.1
1926.....	19.5	14.1	10.6	17.2	16.9	17.3	22.8
1927.....	18.4	13.4	9.9	15.9	15.8	16.1	21.5
1928.....	18.6	13.6	9.8	16.1	16.1	16.2	21.8
1929.....	17.9	13.3	9.6	15.4	15.5	15.4	21.1
1930.....	17.5	13.0	9.5	15.2	15.1	14.8	20.7
1931.....	16.0	11.7	8.8	13.7	13.7	13.5	18.9
1932.....	15.1	10.8	8.4	12.9	13.0	12.9	18.0
1933.....	14.7	10.9	8.7	12.6	13.2	12.8	17.3
1934.....	18.0	14.5	12.9	16.2	16.1	16.5	20.4

* Statistisches Jahrbuch des Deutschen Reichs und Wirtschaft und Statistik.

not to the same degree. Furthermore, it has been assumed that in the future for various reasons, including economic considerations, people attached to agricultural land will maintain or adopt an attitude toward reproduction different from that which has developed among the people living in metropolitan areas.

The unfavorable health conditions under which a considerable portion of the working class population of large cities are living have also been considered as an important reason. As against the unhealthy sections of the urban centers have been pictured the opportunities for healthier living in better houses located in suburban districts and the open country.

In the field of socio-economic arguments one group of reasons for more supplementary farming homesteads has been concerned with the recent decline in Germany's opportunities for exporting and the feeling that Germany's economic structure has become unduly dependent upon foreign markets, and that proper development of the domestic market has been neglected. Here it has been stated that, since many of the existing difficulties in foreign trade are likely to remain, certain restrictions have to be placed on the purchase of foreign commodities, that international economic dependence is to be reduced, and that strenuous efforts have to be made to increase production of raw materials and other products within the country. Supplementary farming homesteads for industrial workers have been expected to help in the realization of increased production and increased domestic trade by expanding the amount of food produced at home and by enabling the workers to spend more of their purchasing power for non-food products since they can produce part of their food requirements themselves.

In the same field, unemployment has been another important factor. In the recent depression the number of jobless reached unprecedented proportions. The average number of unemployed was 1.9 million in 1929, 3.1 million in 1930, 4.5 million in 1931, 5.5 million in 1932, 4.8 million in 1933, 2.7 million in 1934, and 2.1 million in 1935. Apart from these unemployed, many workers had been thrown on short-time work. Altogether, this meant the existence of a considerable number of persons whose income had been partially or completely destroyed. Figures of unemployment have gone down more recently. But in 1931 and 1932, when the movement for supplementary farming homesteads was gaining strength, the number of those out of work was frighteningly large. A good portion of this change in the labor market was viewed as the result of permanent changes in the economic conditions of the country. Some estimated the portion of unemployment attributable to these changes at almost 50%. This situation was accompanied by conditions under which it was more difficult to emigrate to other countries. In addition, provision of relief for these unemployed had become a heavy drain on the National Treasury, as well as on state and local governments, particularly the large cities (Table III).

In solving these difficulties, land settlement has been expected to help in various ways. The reclamation of land, construction of buildings, creation of new roads, manufacture and transportation of durable goods entering into those buildings and developments, and other activities have been viewed as means of increasing the demand for labor. In addition, land settlement has been considered as a factor which will redistribute labor power according to national requirements and offer possibilities for

TABLE III. PERSONS REPORTED UNEMPLOYED PER 1,000 INHABITANTS IN GERMANY, BY LOCAL DISTRICTS OF SPECIFIED SIZE OF POPULATION, AT END OF JANUARY, MAY, AND SEPTEMBER, 1933-1935.*

End of Month	Unemployed per 1,000 Inhabitants			
	Germany	Cities with 100,000 and more Inhabitants	Cities with 50,000 and less than 100,000	Other Districts
1933				
January	92.2	133.0	113.4	71.7
May	77.3	123.6	101.3	53.9
September	59.0	106.7	77.4	35.5
1934				
January	57.9	96.9	73.5	38.3
May	38.8	73.8	53.1	21.1
September	35.0	62.8	47.6	20.9
1935				
January	45.6	68.2	58.5	33.8
May	30.6	53.2	40.5	19.2
September	26.0	46.4	35.0	10.0

* Reports of Reichsanstalt fuer Arbeitsvermittlung und Arbeitslosenversicherung.

savings in relief expenditure.

The material insecurity of the workers in periods of economic distress has been another important argument. It has been felt that those workers who are uprooted from the soil are much less secure in periods of declining business conditions than those who are equipped with a piece of land on which they can grow some of their necessary means of living. Therefore, it has been proposed to give a larger part of the working population access to the soil so that, in times of less employment or unemployment, occupants of supplementary farming homesteads will be able to fall back on their own production and the land can act as a shock-absorber.

Still another reason has been the threatened disintegration of family life. It has been argued that the conditions under which large proportions of the population have been forced to room in large cities have contributed to this disintegration; that family life has suffered in many cases because no satisfactory home existed; and that there is danger of further destruction if these conditions continue. Since a pleasant home has been considered an important factor in the creation of happy and satisfactory family life, it has been proposed to help workers to move into dwellings better than those which they now occupy.

Another factor has been concern over existing trends in the morality of the people. Having been uprooted from the soil, in many workers the feeling of independence which is so common among farmers has disappeared. In addition, moral conditions have suffered a great deal on account of unemployment. Here it has been felt that the possession of a piece of ground will revive the feeling of independence and tend to maintain and foster the dignity of the laborer and his family; and that land settlement is likely to stimulate the willingness of self-help and self-responsibility in a better and safer way than any other measure of work creation.

In the sphere of cultural reasons it has been claimed that past migration has often had undesirable effects on the cultural level of rural regions. Often the best elements have left the countryside, leaving behind the weaker and

less energetic. It has also been stated that many of those who moved townward have become subjected to the forces of demoralization and degeneration which have developed in the huge urban centers. Therefore, the need has been felt to tie the most valuable elements of the population to the soil and prevent them from migrating to large urban centers or emigrating to foreign countries.

Finally, a group of national-political arguments have been advanced in support of homestead settlement. They pertain to the need for strengthening the border regions by increasing population density in such areas and redistributing population in the interior to avoid too great concentration of people and certain vital industries in insecure localities. They also refer to the desire to strengthen the homeland feeling which has been undermined as a result of unsatisfactory dwelling conditions and to lessen the danger of political instability of a people suffering from unemployment and reduced standard of living.

One thing which has to be realized is that, in dealing with all the grave maladjustments which have been set forth as reasons for action, land settlement has not been viewed as a panacea. It has been expected, however, to serve as a corrective on all the fronts mentioned and as a factor which may contribute to the solution of these problems in varying degrees of completeness, in a smaller way here and a larger way there.

Present Methods

From 1931 to the spring of 1934 the new work of the National Government in this field was divided into four construction periods. Each of these periods was characterized by new financial arrangements and the issuing of additional land-settlement regulations, representing either new rules or amendments to existing ones. Since then, one may say, a fifth period has been concluded and a sixth has been started.[3] Within the limits of the present article it will not be possible to describe fully the various methods which have been applied in these periods. A brief discussion of some of them may, however, be included.

Organization. The general administration of the legislative measures of the National Government in this field of land settlement has been shifted several times in recent years. In the period from the fall of 1931 to December, 1934 it was turned over twice to a special Commissioner for Land Settlement. Today it is in the hands of the Ministry of Labor.

A good deal of the present practical land-settlement work is being carried out by so-called Homestead Development Agencies (Heimstaetten). These are semi-public land-settlement companies of non-profit character, which have grown up in the last 10 years and are today spread all over the national territory. An association called the National Union of Homestead Development Agencies represents their common interests and serves as a clearing house for discussion of their land-settlement problems.

Likewise of particular importance is

[3] The main regulations for the first period were issued in a Decree of the National Government of December 23, 1931. Those for the second, third, and fourth periods were contained in the administrative rules and regulations of the National Commissioner for the creation of supplementary farming homesteads of July 1, 1932, in the administrative rules and regulations of the National Labor Ministry of February 20, 1933, and in the Decree of the National Labor Ministry of July 7, 1933, respectively. Important regulations with respect to the later periods were issued in the Decrees of the National Ministry of Labor of February 12, 1935 and June 8, 1935.

the system of homestead offices of the National Socialist Party and the Labor Front. Through this system, consisting of a national office, regional offices, and local branches, the National Socialist Party today exerts a great influence on the creation of supplementary farming homesteads. The offices are concerned with the development of land-settlement policies, but they are also carrying out practical settlement work in respect to selection of settlers. In this latter function their influence has been increasing. Two recent decrees, issued in 1935, ruled that in all cases in which national funds are used in financing projects settlers are to be selected only in collaboration with the offices of this system. The offices have thereby become the leading body in selecting settlers.

Selection of Settlers. Because of its great influence on the outcome of settlement work the selection of settlers is today considered as the most important factor. One thing which is particularly noticeable in the present attitude toward selection of settlers is the fact that the whole family of the applicant is taken into consideration rather than the individual alone. This is done for biological reasons as well as in consideration of the expected participation of the family in the work on the holding.

Current requirements for settlers and their families who are placed on holdings financed with the assistance of the National Government go farther than those of any other European country doing similar work. In accordance with them, the applicant and his wife must be of German nationality and of Aryan descent. They must be politically reliable. In addition, the settler and his family must be in good health and in good condition from the standpoint of heredity. Since the financial assistance of the Government is to benefit primarily those persons who have not enough means of their own to acquire supplementary farming homesteads, the applicant must be in the low-income class. This means that only those full-time employed persons are eligible whose monthly income is below 200 marks. The families must not be heavily in debt and must be able to meet their financial obligations. It is further required that they have community spirit and no habits or inclinations which are likely to disturb the peace of the community. In addition, the families must be familiar with the type of agricultural work they are expected to do on the holding. That is, they must be acquainted with methods of cultivating the soil and raising small live stock. They must be trustworthy and industrious.

Preferential treatment is accorded to war veterans and veterans of the present Nationalist movement and persons injured in the war or in the service of the Nationalist organizations. But before preference is given to these persons they must be able to meet all general qualifications mentioned above. In previous periods special privileges were accorded to families with a large number of children, but it is generally held today that the existence of a large number of children shall not be sufficient. It is thought that, above all, the families applying for settlement must meet the racial and biological requirements. Unless these are met, a large number of children is not supposed to count.

Regulations for the first construction periods stated that those to be admitted should primarily be unemployed and short-time workers. They also pointed out that those who had been unemployed over a long period of time should be given preference. This policy was in line with the then prevailing thought

to make supplementary farming homesteads primarily a means of unemployment relief. Since the results of this policy were rather unsatisfactory, in later periods no more emphasis was placed on unemployment as a qualification. As a matter of fact, the idea of settling jobless persons was gradually abandoned. More recently the attitude has been taken that primarily full-time employed workers should be selected for the newly established supplementary farming homesteads.

An elaborate procedure of examination has been worked out by the National Homestead Offices of the National Socialist Party and the Labor Front, involving the filling out of questionnaires, submission of a certificate on the settler's wage status by the enterprise where he is employed, examination of these statements first by local bodies, then by the regional homestead offices, and finally by the National Homestead Office, as well as the issuing of settlement licenses. This procedure has recently been ruled for all those projects which are financed by the National Government.

Location of Holdings. One of the most important rules of today is that new holdings are to be created only in places where applicants can safely be expected to make a living. To make sure that this rule is followed settlement agencies have been instructed by the National Ministry of Labor to develop their settlement plans in collaboration with the National Employment Service, its national office as well as its regional and local branches. In determining the location of new settlements attention is also to be paid to the price and quality of the land as well as to the question of whether or not the settler is able to go to his working place within reasonable limits of time and cost.

Size of Settlement Unit and Equipment. In determining the amount of land to be attached to the homestead, primary attention is given to the amount of labor available in the family, the quality of the soil and climatic conditions, and the fact that the holding is expected to protect its occupants as much as possible against distress in periods of less employment. For the first period it was provided that the land attached to the homesteads should not be below 600 square meters (0.18 acres) and not above 5,000 square meters (1.25 acres). For the fourth period a minimum of 1,000 square meters (0.25 acres) was established. This minimum has since been maintained.

The holdings are to be equipped in such a way as to enable the occupants to produce vegetables and fruits. In addition, they are expected to be supplied with the necessary facilities for raising small live stock, such as poultry, rabbits, goats, and possibly hogs.

Financing. The total amount of capital appropriated by the National Government for the four construction periods running from 1931 to the spring of 1934 was about 190 million marks. Up to then about 94 million had been paid out. After further commitments had been made in 1934, about 35 million were carried over into 1935. In February, 1935, the Reich launched a refinancing program designed to mobilize, with the help of private capital, part of the funds it had advanced previously. Furthermore, another 70 million were made available in June of that year. The present government is of the opinion that in the future the major portion of the financing of these homesteads should be accomplished without public assistance, and that, accordingly, the settlers themselves and private financial institutions should furnish more capital for

this purpose than they have in the past. For the time being, however, the supplying of large public funds is likely to continue, since the present scarcity of capital is still a great obstacle to realization of this idea.

Financial assistance by the National Government has been given both in the form of loans and loan guarantees. As to the direct advancing of funds, two types of loans have been granted, basic loans and supplementary loans. In the first two construction periods the basic loan was to be not more than 2,500 marks. This amount was reduced to 2,250 marks for the third and fourth periods. Today it is only 1,000 marks.

Supplementary loans have been granted to families with large numbers of children as well as to those veterans of the world war and the present Nationalist movement who are suffering from illness or were injured in connection with their service. Families having at least four children of less than 21 years of age living with them in their household are at present entitled to a loan of up to 200 marks in addition to the basic loan. If there are five or more children, the additional sum of money may be increased up to 400 marks. Under present regulations, however, supplementary loans are in no case to exceed 400 marks. The purpose of these supplementary loans is to facilitate financing the construction of additional bedrooms. Accordingly, no such loan is to be granted unless one or more bedrooms are built and the corresponding additional building costs equal at least the amount of this supplementary advance.

The rate of interest to be paid today on government loans is 4%. In the case of families with more than four children below 21 years of age interest payments may be reduced not exceeding 40 marks annually for the first three years. Payment is to start the first month following the date at which the Building Inspection Authorities have declared the house to be ready for occupation.

The amortization rate is 1%. Under previous rules no amortization payment used to be made during the first three years. Today repayments are to start with the beginning of the calendar year following payment of the last instalment on the settlement loan.

Settlers are expected to contribute to the financing of their holdings. Their own contributions have to be at least 20% of the value of the land and building costs, if they are to become eligible for a loan from the National Government. The form in which they are expected to contribute varies. They may pay part of the cost in cash, bring in other assets such as the value of a piece of land, add to the capital needed by their own labor by way of self-help work on their own holding or those of their neighbors, or furnish such financial means as are made available to them by third persons based on confidence in their personal ability.

Costs. Since high settlement costs will place heavy financial burdens on the settlers with the possibility that settlement will become a failure on account of unbearable obligations, and since high costs are also likely to prolong the period of payment of interest and amortization, efforts have been made to keep costs as low as possible. In line with these efforts the National Government provided for the first settlement period that no money should be advanced out of its own funds, unless the total expenditure for construction of the holding and its equipment would stay under 3,000 marks. This rule still exists. Under it this sum does not include the price of the land, the value

of the settler's contribution by his own labor, and the value of the supplementary loan, if such a loan has been granted.

However, certain exceptions to this rule have been admitted. Where the character of the land, especially high costs of water supply, and similar factors lead to an inevitable increase of settlement costs, consideration may be given to projects which include holdings costing as much as 4,000 marks. The same applies to cases in which the size of the operating unit, occupation, or other conditions in the settler's family require the establishment of larger buildings; or in which settlers, because of their employment on full-time or part-time work or because of physical handicaps (such as injuries received in the world war), are unable to contribute to the creation of their holdings by the usual amount of self-help work.

To keep building costs down by only gradually expanding and completing the construction of the living quarters is considered an important principle in present land-settlement policies. In line with this idea the settler is asked to scale down his immediate wants with respect to his living quarters in the interest of keeping his financial obligations of the first few years down and to carry out the rest of his building plans only after he has lived for a while on the holding and established a firm economic base for advancement.

Financial Burden of Settler. To prevent the financial burden placed on the settler from getting out of line with his capacity to pay, the Government decided to establish a maximum for his monthly obligations. This maximum for holdings financed by the Government is today 25 marks. Included in these 25 marks is the payment for the land, either as rent on leased land or as an instalment payment on the purchase.

Projects involving a financial burden amounting to 30 marks per month may be assisted by Government funds if the following conditions exist jointly: (1) the size of the agricultural land comprises at least 2,500 square meters (0.63 acres); (2) in case the land is leased, the lease contract runs over a period of not less than 18 years; (3) the land is of specially good quality; (4) the family includes enough labor to operate the amount of land mentioned; (5) the settlement family has operated successfully a corresponding area of land during the last three years or is able to furnish sufficient other guarantees to the effect that it is capable of managing such a holding; (6) prospective yields of productive operations promise a substantial surplus over expenditure; (7) the total amount payable by the settler does not exceed ¼ of his income from wages, pensions, and other sources.

Results

What are the results of the present movement for the creation of more supplementary farming homesteads? A few surveys made in the last two or three years throw some light on this point. In many respects, however, it is still too early to judge definitely whether or not the newly created holdings are bringing about all desired changes.

The number of holdings established in the first four construction periods with the financial assistance of the National Government and their distribution over the various major political subdivisions are shown in Table IV.

Since in the first construction period this type of land settlement was largely used as a measure of bringing relief to unemployed persons and of improving conditions mainly in areas where relief

loads were particularly heavy, the major portion of operations took place in the vicinity of big cities and large industrial centers. Abandonment of this policy brought a change in the location of the more recent projects with the result that the areas of middle-sized and small towns and the open country have gained a greater share in the total number of new homesteads. This change is clearly visible in Table V.

Some idea about present population growth on those supplementary farming homesteads which were in existence in Germany by 1933 may be gained from Table VI.

This table indicates that in the occupational groups mentioned the portion of families having no children was much smaller where land was held. It also indicates that, where children exist, cases of three and more than three children are more numerous among families with land than among families without land. How similar data on newly created supplementary farming homesteads will compare with the figures given above will be very interesting to know. So far no data on this point are available.

There is no doubt that the new supplementary farming homesteads have brought many hygienic improvements in the dwelling conditions of many industrial workers who formerly were very poorly housed. These improvements

TABLE IV. NUMBER OF SUPPLEMENTARY FARMING HOMESTEADS CREATED WITH ASSISTANCE OF PUBLIC AGENCIES, IN THE FOUR CONSTRUCTION PERIODS, 1931-1934.*

Regions	First Period Number	Second Period† Number	Third Period Number	Fourth Period Number	Total	Percent
Germany	17,828	12,760	15,599	19,283	65,470	100.00%
Prussia	11,255	7,706	10,091	11,504	40,556	61.95
Berlin and Brandenburg	2,442	2,648	482	1,108	6,680	16.48
East Prussia	500	636	376	2,200	3,712	9.16
Posen-West Prussia	.....	50	70	200	320	0.78
Pomerania	319	260	784	1,260	2,623	6.44
Lower Silesia	820	362	1,112	1,350	3,644	8.99
Upper Silesia	456	863	.....	600	1,919	4.73
Saxony	1,094	432	1,310	1,004	3,840	9.46
Schleswig-Holstein	362	161	500	300	1,323	3.27
Hanover	648	339	1,172	1,033	3,192	7.87
Westphalia	518	200	694	620	2,032	5.02
Ruhr Coal District	1,770	526	1,124	200	3,620	8.93
Rhineland	1,496	943	1,863	1,043	5,345	13.19
Hessen-Nassau	830	286	604	586	2,306	5.68
Bavaria	1,726	1,202	1,442	1,939	6,309	9.64
Saxony	1,921	1,550	1,485	2,120	7,076	10.81
Wuerttemberg	424	364	650	720	2,158	3.29
Baden	606	357	470	740	2,173	3.32
Hessen	320	200	284	412	1,216	1.85
Thuringia	590	345	412	542	1,889	2.89
Mecklenburg	56	122	120	170	468	0.72
Braunschweig	60	60	126	170	416	0.63
Oldenburg	90	89	50	126	355	0.55
Anhalt	100	99	94	130	423	0.65
Lippe-Detmold	30	40	29	46	145	0.22
Hamburg	486	417	205	459	1,567	2.39
Bremen	68	104	99	130	401	0.61
Luebeck	84	105	42	59	290	0.44
Schaumburg-Lippe	12	.....	.....	16	28	0.04

* Deutsche Bau- und Bodenbank, Denkschrift ueber die Vorstaedtische Kleinsiedlung, pp. 11 and 13.
† Consisting of periods II and IIa which are combined in this table.

TABLE V. DISTRIBUTION OF NEW SUPPLEMENTARY FARMING HOMESTEADS OVER POLITICAL SUBDIVISIONS GROUPED ACCORDING TO NUMBER OF INHABITANTS.*

Class of Political Subdivisions according to Number of Inhabitants	Percent of All Homesteads Established	
	First Period	Fourth Period
500,000 and more	24.0%	13.0%
200,000 to 500,000	19.0	4.9
100,000 to 200,000	14.0	3.7
50,000 to 100,000	13.0	5.3
25,000 to 50,000	10.5	9.9
10,000 to 25,000	9.5	14.9
5,000 to 10,000	4.0	10.7
2,000 to 5,000	2.5	13.1
Below 2,000	3.5	24.5

* Deutsche Bau- und Bodenbank, Denkschrift ueber die Vorstaedtische Kleinsiedlung, p. 14.

will not fail to react favorably on the health of the occupants of the new homesteads.

As to what part of the homesteader's income results from his own production, a recent study of supplementary farming homesteads created in Brandenburg and Posen-West Prussia in the first and second periods from October, 1931 to the end of 1932[4] reveals that on ¼-acre holdings, on which production was confined to fruits, vegetables, and potatoes and no small live stock was held, the value of the commodities raised annually amounted to from 140 to 193 marks. If small live stock, consisting of one hog, one goat, five to six chickens, and some rabbits, had been added and the necessary feed bought outside, the value of the commodities produced ranged from 330 to 383 marks. If feed was produced on additional rented land it amounted to from 401 to 430 marks.[5] Taking 1,500 to 2,000 marks as a desirable normal income for industrial workers, it seems possible to produce on such supplementary farming homesteads

[4] Gertrud Laupheimer and Marie Hoegel-Wertenson, *Die vorstaedtische Kleinsiedlung in der Mark Brandenburg und in der Grenzmark, Deutsches Forschungsinstitut fuer Agrar- und Siedlungswesen*, Abteilung, Berlin, 1935.

[5] *Ibid.*, pp. 41-44.

TABLE VI. POSSESSION OF LAND AND PERCENT OF FAMILIES HAVING SPECIFIED NUMBER OF CHILDREN IN DIFFERENT OCCUPATIONAL GROUPS, 1933.*

Social Position of Family Head and Possession of Land	Percent of Families Having Specified Number of Children					
	None	1	2	3	4	5 and More
Independent operator in industry and commerce.						
Without land	26.0%	26.1%	21.5%	11.8%	6.1%	8.5%
With land	14.5	19.2	21.8	15.5	10.0	19.0
Worker in industry, commerce, and public service						
Without land	25.9	30.0	19.6	10.2	5.6	8.7
With land	13.0	22.5	21.9	14.8	9.5	18.3
Civil service						
Without land	25.8	30.0	22.8	11.1	5.1	5.2
With land	13.4	22.4	25.8	16.3	9.2	12.9
Employee in industry, commerce, and public service						
Without land	33.4	31.7	19.4	8.2	3.6	3.7
With land	18.0	26.6	24.0	13.5	7.3	10.6
Agricultural laborer						
Without land	19.2	24.6	19.0	12.1	7.9	17.2
With land	10.9	17.8	18.4	14.2	10.5	28.2

* Population Census of Germany, 1933.

about ¼ of that amount. With respect to this estimate as well as to other similar calculations it must, however, be said that they have to be used with caution in the formulation of a final opinion as to the merits or demerits of this type of settlement. They refer to holdings which are not yet fully developed. It is well known that some time is required before new settlements reach their full development. Frequently the whole first decade of the homesteader's life on his new holding is devoted to developmental work.

Whether the new supplementary farming homesteads will be able to protect workers against distress in future times of depressed business conditions and to keep down the number of people on relief rolls remains to be seen. It has been claimed that those which grew up previously have been able to do this. To illustrate the distribution of the relief burden in the last depression Table VII shows the number of persons who were receiving relief per 1,000 inhabitants in the various employment exchange districts in April and October of 1935. Distribution of unemployment relief loads over the various districts has been influenced in a large measure by the degree to which separate industries were hit by the depression and the degree to which industries of a given area were working for export. But, while this is the case, these figures also seem to reveal some relationship between relief loads and number of supplementary farming homesteads. They show that, apart from the mainly agricultural areas of East Prussia, Pomerania, and Bavaria, the relief loads were comparatively low in Southwestern Germany (Baden and Wuerttemberg), in Hessen, and in Lower Saxony (Braunschweig, the greater portion of Hanover, and Oldenburg). These districts include those states and provinces in which, it will be remembered, supplementary farming homesteads have reached their greatest growth.

TABLE VII. UNEMPLOYED PERSONS RECEIVING RELIEF IN GERMANY PER 1,000 INHABITANTS, BY EMPLOYMENT EXCHANGE DISTRICTS, APRIL 30 AND OCTOBER 31, 1935.*

District	April 30, 1935	October 31, 1935
Germany	29.8	19.5
East Prussia	4.9	1.8
Silesia	30.6	27.1
Brandenburg	43.5	21.6
Pomerania	8.5	7.5
Nordmark	40.7	22.1
Lower Saxony	18.9	9.4
Westphalia	32.4	21.9
Rhineland	41.8	28.9
Hessen	26.7	23.6
Middle Germany	23.2	10.7
Saxony	50.2	37.9
Bavaria	19.0	12.4
Southwestern Germany	14.9	9.6

* Reports of Reichsanstalt fuer Arbeitsvermittlung und Arbeitslosenversicherung.

According to Laupheimer and Hoegel-Wertenson, the supplementary farming homesteads established in Posen-West Prussia and Brandenburg during the first and second settlement periods from October, 1931 to the end of 1932 have brought about changes in the dwelling conditions of the settlers as to rent payments and number of rooms as indicated in Table VIII.

Monthly rents paid by the settlers before their placement on new supplementary farming homesteads varied between 10 and 46 marks. Those which they will have to pay in the future range from 10.40 to 18.25 marks. The variations in the new rents are caused mainly by differences in the cost of settlement land. In most cases the future payments to be made by settlers form a notable saving in expenditure for dwelling. In some instances settlers have to pay more than they did in their old dwellings. This, however, does not necessarily mean that their

TABLE VIII. DWELLING CONDITIONS AS TO RENT PAYMENTS AND NUMBER OF ROOMS ON NEW SUPPLEMENTARY FARMING HOMESTEADS IN SPECIFIED AREAS OF BRANDENBURG AND POSEN-WEST PRUSSIA.*

Settlement	Former Monthly (Marks)	Future Monthly Payments† (Marks)	Annual Increase (+) or Decrease (−) in Payments (Marks)	Number of Rooms‡	
				Previously	Now
(1)	(2)	(3)	(4)	(5)	(6)
Angermuende	19	14,41	− 59	3	3
Brandenburg	15–38	10,41	− 60 to −336	40 cubic meters	3+1
Erkner	20–40	10,40	−120 to −360	3	3
Eberswalde	20	12,50	− 90	2½–3	3+1
Falkensee	28	17,00	−137	2¼	3+1
Klein-Schoenebeck	16–46	18,25	−12 to −331	2– 3	4
Luckenwalde	25–30	10,40	−180 to −240	3	3+1
Neuenhagen	25	17,00	− 96	2–2½	3
Nowawes	22	17,50	− 24	35–40 cubic meters	3+1
Oranienburg	35	16,25	−192	3	3+1
Potsdam	28	15,30	−156	3	3+1
Prenzlau	20	14,23	− 66	4	3(+1)
Kottbus	15–20	13,00	− 24 to − 84	2– 3	3
Frankfurt I	15–25	13,85	− 15	25–36 cubic meters	3
Frankfurt II	.....	15,40	± 0 to −120	2– 2,5	.....
Buben	12–15	15,00	± 0 to + 36	2	3+1
Hangelsberg	16–18	12,00	+ 48 to + 72	3	4
Lauta	14	12,50	− 24	2– 3	3
Peitz	10–20	12,50	+ 30 to − 90	2– 3	3
Senftenberg	17	18,00	+ 12	3	3
Sorau	16–24	14,00	− 24 to −120	2– 3	3
Spremberg§	10–20	14,50	+ 54	2– 3	3
Vetschau	13	13,00	± 0	2– 3	3
Welzow	16–18	12,00	− 48 to − 72	3	3−(4)
Graustadt	16 and 23	14,58	− 17 to −101	2	3−4
Schneidemuehl	10	15,50	+ 66	3 2	2

* Laupheimer and Hoegel-Wertenson, *op. cit.*, pp. 45 and 46.
† Final amount.
‡ Kitchen included.
§ In some instances more than 30 marks. Where this occurred, the increase or decrease in annual payments ranged between −66 and −186 marks.

economic situation in this respect has become more difficult, since the new rent payments include not only interest and amortization for the house but also rent for the site and interest for the homestead equipment financed in connection with the settlement loan.

There are no signs that government interest and assistance in the creation of supplementary farming homesteads will decrease in the near future. On the contrary, it may be expected to increase since the National Socialists are entirely in agreement with this type of settlement and have made it one of the main points in their program.

Urban Land Department

MORTON BODFISH, *Editor*

Guaranteed Certificated Mortgages in New York

THE first report of the Mortgage Commission of the State of New York[1] is the occasion for this brief review of the field of real estate financing through guaranteed certificated mortgages. When this new Commission was created in 1935, the majority of these mortgages issued within the State and then outstanding was transferred to it.

The real estate mortgage, guaranteed as to interest and principal, apparently had its genesis in this State as a relative of real estate title insurance, but there is no question of a specific allocation to this State of its extreme development. In 1920, 11 companies were engaged in this business and their outstanding guarantees aggregated $529,000,000, while by 1930 the guaranteeing companies had increased to 50 and their guarantees to some $2,867,000,000. It may never be possible to allocate cause and effect, on the one hand, to money seeking investment upon the ultimate security of real estate and, on the other hand, to real estate developments seeking sources of financing other than that of owner or promoter, but the effect of a public demand for these guaranteed mortgages or participations is often encountered in examinations of the substantial growth cited above. The depression emphasized two major weaknesses in this field—one, a practice of virtual real estate value insurance conducted without regard for even a normal loan mortality, and the other, one of faulty appraisals by no means peculiar to the guaranty companies.

Rehabilitation or liquidation was begun for many companies which could not withstand the shock of unpaid taxes and mortgage interest early in 1932. The largest take-over was made in August, 1933, and the process has continued with a rehabilitation order as recent as January 7, 1936. The work of rehabilitating or liquidating these companies fell to the lot of the Superintendent of Banks and the Superintendent of Insurance. These offices were first charged with the duties of protecting two classes of interests—the companies' general creditors and the shareholders and the holders of the guaranteed mortgage investments. Clearly, these interests are diametrically opposite. This anomalous situation was further complicated by mortgages aggregating more than $800,000,000 which had been sold to the public in the form of participations or certificates supported in interest and principal repayment by "specific" or individual mortgages and by "group" or several individual mortgages combined to give one base of issue. In the case of the specific certificated mortgages *one* mortgagor was making interest and satisfaction payments to the guaranteeing company which was intrenched as the servicing agent or intermediary for *several* investors. For groups of individual mortgages consolidated in one base of issue for certificates, the multiplicity of investors in one issue was further confounded by a multiplicity of mortgagors involved. Such problems are nowhere nearly approached in the case of the guaranteed "whole" mortgages where there are but two principals—one mortgagor and one mortgagee.

The Mortgage Commission was created in 1935 to obviate such confusion of duty and "to encourage, promote, and facilitate self-organization by the holders of mortgage investments" in the form of guaranteed certificates, whose guaranteeing company was or would be placed in rehabilitation or liquidation. The Commission acquired actual title to the mortgages or real estate underlying such participations, but it has no jurisdiction over the guaranteeing companies or the whole mortgages which they guaranteed. In its inception this agency became a large mortgage-servicing, reorganizing, and real estate management and brokerage institution, serving as trustee for more than 200,000 certificate holders in their encounters with 15,275 property owners or their properties taken in foreclosure.

In May, 1935 the Commission took over the collateral supporting 7,800 separate

[1] State of New York, Legislative Document (1936), No. 60.

issues of certificates in an aggregate amount of $685,976,116.33, within which 6,964 specific mortgages totalled $569,042,705.72, and 836 group issues embracing 8,311 mortgages or properties totalled $116,933,410.61. This take-over did not include: (1) collateral in an amount of some $78,000,000 for which the Commission's jurisdiction is being legally contested; (2) issues included in completed reorganizations which entailed trustees or a corporation to act for certificate holders in the respective issues; or (3) issues where the outstanding certificates were held by one person, firm, or corporation.

At its take-over the Commission found mortgagors' interest arrears to aggregate $40,914,244, or an average arrearage on all mortgages equal to 6%. This one-year period of arrears is misleading because of the sound mortgages included in such a blanket average, and by their elimination the average period of actual default for the "trouble loans" was between 18 months and two years. In addition to the interest arrears, tax and assessment arrears on the properties underlying the certificated mortgages totalled $22,025,772, with some arrears dating back as far as 1925. Furthermore, if all such arrears could have been liquidated as of June 30, 1935, penalties would have amounted in addition to more than $1,700,000.

The Commission's attack upon this serious problem is conditioned by the wide range of properties which support the certificated issues it has acquired. The distribution of properties according to use is indicated on Chart I, as well as the status of operation as of May, 1935. The properties range from the many one- and two-family dwellings in the first class through commercial uses to such specialties as churches, club houses, and golf links. A large number of the properties are non-income producing, in bad condition, unimproved, or even uncompleted structures not warranting completion.

The status of operation of these several types of property, as presented on the chart, is described in terms of six classes of operation. The operation distribution of the total number of properties within the respective use classifications is shown by the various shaded areas which are coded to the right of the chart. The distinction between owner in

CHART I

CERTIFICATED MORTGAGE STATUS BY TYPE OF PROPERTY, MAY, 1935

PREDOMINANT USE	DWELLINGS	MULTI-FAMILY UP TO 6 FLOORS	MULTI-FAMILY OVER 6 FLOORS	HOTELS	OFFICE BUILDINGS	LOFTS	STORES	THEATRES AND HALLS	GARAGES	MISCELLANEOUS	VACANT LAND	TOTAL
NUMBER OF UNITS	8943	3593	143	48	87	170	897	87	366	620	341	15,275

possession with and without arrears is based upon tax and interest arrears (a moratorium law precludes arrears for principal) with an arbitrary grace period of six months allowed before an owner is considered "with arrears." The next class of "monthly deposit" operators represents those properties for which the owner is in arrears but is following some informal arrangement for their liquidation. The three remaining classes need no explanation. As between the types of property, this exhibit represents a cross section of loan mortality experience, not solely regulated by the respective properties' capacity to meet interest and taxes, but a combination thereof with the owners' ability to meet fixed charges from other sources.

One of the Commission's many functions, quite in keeping with the times, is that of reorganization to break the deadlock of contract conditions which cannot be met and thus to transfer a mortgage in default to a sound basis where arrears can be liquidated and regular, although possibly reduced, payments of interest resumed. In its take-over, the Commission received 213 issues of $40,508,306 which had been reorganized through court proceedings,[2] together with 388 small issues of $7,299,007 which had been reorganized by 100% consent, thereby obviating the necessity for a court proceeding. Such reorganizations represented an accomplished business deal for extension of due date, interest reduction, real estate sale, etc., wherefor the need for a second reorganization of some issues has already been encountered. In the balance of its take-over were issues with reorganization pending in court, others which were far short of reaching an acceptable reorganization plan or no solution at all had been attempted. Two-thirds of the dollar volume and over 80% of the number of issues in the Commission's take-over had not reached a satisfactory preliminary stage of reorganization. It is impossible to set aside any definite portion of the above as not needing reorganization, because even those owners who are not in arrears may be undergoing heavy sacrifice to remain in that state, and are more entitled to an equitable adjustment of their burden than are those who have piled up arrearages.

The Commission's duties in this and all other respects are tasks and also opportunities. The immediate task of the Commission is to protect certificate holders. In the process, a large volume of real estate must be put on a sound footing. The everyday administrative routine, together with the research necessary to solve these problems, should yield a mass of valuable experience to be codified and made available for future developments in real estate finance.

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[2] Prior to creation of the Mortgage Commission, certificated mortgage reorganizations were regulated by the Schackno Act (Laws of 1933, c. 745), whereas the Mortgage Commission Act (Laws of 1935, c. 19) presented another vehicle for such reorganizations. In reorganization regulation the fundamental difference between the procedures set up by the two Acts is that the former calls for 66⅔% consents of the outstanding amount of certificates to validate a plan, while the latter considers a plan valid if 33⅓% dissents are not received.

Judicial Sanction of Public Housing by the New York Court of Appeals

THE relationship of slums to public health, safety, and morals and the inability or unwillingness of private capital to undertake the task of furnishing decent dwelling places to the low-income group have been recently and forcefully urged as justifications for governmental intervention in the housing field.[1] For those who are convinced of the economic and social desirability of such intervention, the dismissal of *United States* v. *Certain Lands in Louisville*[2] accentuates the importance of state courts upholding state housing activities, since the dismissal of that case leaves the constitutional status of federal housing

[1] For a convincing discussion of the need for governmental intervention in the slum problem, see: Edith Elmer Wood, "Slums and Blighted Areas in the United States", *Bulletin No. 1 of the Housing Division of the Federal Emergency Administration of Public Works* (1935). The author indicates the relation of the slum to public health, safety, and morals.

[2] 9 F. Supp. 137 (W. D. Ky., 1935); aff. in 78 F. (2d)

(Footnote 2 continued on page 194)

not only undecided but somewhat doubtful.

The recent decision of the New York Court of Appeals in *New York Housing Authority* v. *Muller, et al.*,[3] is the first holding by a highest state court to the effect that a state's power of eminent domain extends to the taking of property for the purpose of replacing slums by sanitary living quarters. In order so to hold it was necessary for the Court to decide that low-cost housing was a "public use," since the limitation that private property may be taken only for a public use is to be implied from practically every state constitution.[4]

Despite the novelty of the situation confronting the court, it is not surprising that the court decided as it did, since it had long ago been held in New York that to take private property for promotion of the public health was to take for a public use,[5] and this seems to be in accord with the view of most courts.[6] Also, not a few other courts are in accord with the view of the Court of Appeals that the meaning of the phrase public use is largely dependent upon existing social and economic conditions.[7] Thus it is not improbable that state courts would, in large part, be disposed to follow the Muller decision, especially if astute counsel took pains to bring to their attention the intimate relationship between housing and health.

Certain state decisions, however, seem to indicate that all state courts might not consider low-cost housing a public use. In 1912 the Supreme Judicial Court of Massachusetts rendered an advisory opinion which disapproved a proposed statute providing for building and leasing homes in thinly populated areas in order to promote the public health by inducing laborers to leave congested areas within cities.[8] Other courts hold that unless the public, even if only a limited portion thereof, is entitled as a matter of right to a fixed and definite use of the property taken, the taking is not for a public use.[9] It would seem that courts so holding would find difficulty in sustaining state condemnations for public housing. Housing facilities created by the state can hardly be available as a matter of right even to a limited portion of the public, since it is apparent that the state, through its agents, must be able to select those to whom such facilities shall be available.

It is important also to note that the Muller case does little, if anything, to fortify the federal housing program.[10] Eminent domain is a power inherent in state governments, but exists in the Federal Government only incidentally to some granted power. Thus the Federal Government may exercise the power of eminent domain only in order to carry out some substantive power to be found in the Constitution. Probably the only substantive power upon which might rest the power of the Federal Government to condemn property in order to erect low-cost dwelling places would be the power to spend money for the general welfare.[11] But the Supreme Court of the United States has not yet declared that this is a substantive power, and, as is well known, there exists a great divergence of views on the subject. And even if it is sometime decided that there is such a substantive power in the National Government, it would further have to be decided that low-cost housing was a national public use, because of the limitation of the Fifth Amendment.[12] The majority opinion of the Circuit Court of Appeals in the Louisville case suggests the possibility that what may be a public use within a state is not

(Footnote 2 continued from page 193)

684 (C. C. A. 6th, 1935); dismissed on motion of Solicitor General, 294 U. S. 735 (1935); followed in *United States v. Certain Lands in Detroit*, 12 F. Supp. 345 (E. D. Mich., 1935).

[3] —N. E.— (New York, 1936).

[4] See Nichols, *Eminent Domain* (2d ed., 1917), §37. The Fifth Amendment to the Federal Constitution imposes a similar limitation. This is applicable only to the Federal Government, however. (*Fallbrook Irrigation District v. Bradley*, 164 U. S. 112, 158 (1896).) Nevertheless, the requirements of due process prohibit a state from taking private property for other than a public use, even if a state constitution should impose no such limitation. But it may be concluded from the cases that a state's action in condemning property would have to be arbitrary indeed before the Supreme Court would declare that there had been a violation of due process. See Nichols, *op. cit.*, §43.

[5] *Matter of Ryers*, 72 N. Y. 1, 7 (1878).

[6] See Nichols, *op. cit.*, §54.

[7] *Ibid.* at p. 128.

[8] *In re Opinion of the Justices*, 211 Mass. 624, 98 N. E. 611 (1912).

[9] See, for example, *Arnsperger v. Crawford*, 101 Md. 247, 61 Atl. 413 (1905).

[10] For a discussion of the constitutional aspects of the federal program, see: Corwin, "Constitutional Aspects of Federal Housing," 84 *University of Pennsylvania Law Review* 131 (1935).

[11] U. S. Const., Art. I, §8.

[12] See note 4 above.

necessarily a national public use. Although the Supreme Court has been extremely liberal in upholding state condemnations,[18] it may fail to exhibit the same liberality in construing the Fifth Amendment and adopt the suggestion of the Circuit Court of Appeals.

Thus, while the Muller case is definitely a step toward judicial sanction of public housing, it is clear that several important legal questions relating to housing are yet to be settled. When courts are called upon to decide the constitutionality of housing legislation, one point should be urged strongly upon them: as certainly as the phrase "public use," as used in our federal and state constitutions, was intended as a limitation on the power of eminent domain, just so certainly the phrase was never intended so to fetter the power of government that the power of eminent domain would be found lacking when economic and social needs decreed that it should be used.

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[18] Cf. *ibid.*

The Record of Long-Term Real Estate Securities: by Cities of Issue

A PREVIOUS study[1] examined the record of long-term real estate issues amounting to a million dollars or over each, sold during the years 1919-31. The study was intended to show how investors fared as a group. It did not indicate the extent to which the fate of investors varied, depending upon the city in which the securities were issued. To throw additional light on the record of real estate securities, such an examination is here undertaken.

The bulk of the real estate flotations examined in the previous study were floated in relatively few metropolitan centers. Nine cities issued over two billion dollars of these securities, slightly less than ¾ of the total number of issues and somewhat more than that proportion of the total volume. New York and Chicago together accounted for over ½ of the total amount issued in the country and nearly ¾ of the flotations in the nine cities.

The results of this study, summarized in Table I, show considerable dissimilarity among cities. In bonds called, Washington, San Francisco, and Boston show larger percentages than the average for the group. The calls were concentrated in issues floated before 1926 when coupon rates were high.

[1] 12 *Journal of Land & Public Utility Economics* 44-48 (February, 1936).

TABLE I. SUMMARY OF LONG-TERM REAL ESTATE ISSUES AMOUNTING TO ONE MILLION DOLLARS OR OVER OFFERED IN NINE CITIES, 1919–1931.

(Amounts in Millions of Dollars)

City of Offering	Total Issues	Securities Retired				Securities Outstanding			
		Called		Matured		Meeting Contract		Not Meeting Contract	
	Amount	Amount	Percent Total	Amount	Percent Total	Amount	Percent Total	Amount	Percent Total
New York	$974.0	$132.8	13.6%	$124.2	12.8%	$149.4	15.3%	$567.6	58.3%
Chicago	547.1	79.9	14.6	35.1	6.4	31.6	5.8	400.5	73.2
Detroit	145.4	20.7	14.2	22.0	15.1	12.6	8.7	90.1	62.0
Los Angeles	104.2	15.4	14.8	15.4	14.8	13.2	12.7	60.2	57.7
Philadelphia	94.2	6.0	6.4	7.8	8.3	28.1	29.8	52.3	55.5
San Francisco	69.5	14.8	21.3	15.0	21.6	18.0	25.9	21.7	31.2
Washington	66.6	25.7	38.6	4.0	6.0	1.0	1.5	35.9	53.9
Boston	54.5	9.4	17.2	8.1	14.9	11.0	20.2	26.0	47.7
Cleveland	54.0	6.8	12.6	10.7	19.8	4.2	7.8	32.3	59.8
Total	$2,109.5	$311.5	14.8	$242.3	11.5	$269.1	12.7	$1,286.6	61.0

The easier credit conditions which prevailed later made it profitable to retire these securities. On the other hand, Philadelphia called relatively few of its earlier issues.

San Francisco, with a generally good record for meeting scheduled payments has the highest percentage of securities retired by serial payments and purchases for sinking funds. Cleveland has retired a fairly large proportion of the issues floated before 1926. The Philadelphia percentage is small because sinking fund payments on some large issues floated in the early years retired only a small part of the issues. Chicago, with a large volume of failures, shows only a small part of its issues matured. The Washington figure is low because so many of the early issues were called. For the cities as a group, calls and payments at maturity accounted for the retirement of about ¼ of the securities.

There remain for consideration, $1,556.7 million outstanding securities, or 73.7% of the total. San Francisco and Boston have the best record in that they have a higher than average percentage of issues which have met the contract terms and a smaller percentage of failures. Although Philadelphia has a good record in the first respect, it has only a slightly better than average showing in the second, for the reason that so few of its securities were retired by call or payment at maturity. The low figure for Washington is not so significant as it may seem because of the large percentage of bonds called. Detroit and Cleveland have less than the average proportion of securities meeting regular payments, and their record on failed securities is about average. Chicago with $400.5 million securities that failed to meet contract terms has a conspicuously bad record.

How much could the holders of the outstanding securities realize in the market? This information is summarized in Table II which compares the prevailing bid prices for April, 1935[2], with the face value of the outstanding securities. Where failures are not involved, holders of securities issued in Cleveland and Detroit could realize nearly 100 cents on the dollar but, as indicated above, these cities had relatively few securities in this group. The San Francisco securities stood up well. Purchasers of New York securities suffered most severely, realizing only 62 cents on the dollar.

Cleveland purchasers took the heaviest losses on securities which failed to meet the terms of issue, being able to realize only about 14 cents on the dollar. On a number of issues the quotations were very low. Investors in securities issued in Detroit and Chicago were only slightly better off. The Chicago record is particularly significant because of the large volume involved. The San Francisco issues again have the best record.

The foregoing results are summarized in Table III which compares the total recover-

[2] This date was chosen because Moody's *Banks and Finance Manual*, published in May, was the source of data on amounts of issues outstanding. Presumably April was the last month for which information was complete.

TABLE II. MARKET VALUE OF OUTSTANDING REAL ESTATE SECURITIES DURING APRIL, 1935, COMPARED TO FACE VALUE

(Amounts in Millions of Dollars)

City of Offering	Issues Meeting Contract			Issues Not Meeting Contract		
	Face Value	Market Value	Percent of Market to Face Value	Face Value	Market Value	Percent of Market to Face Value
New York	$149.4	$ 92.9	62.2%	$567.6	$159.7	28.1%
Chicago	31.6	25.4	80.4	400.5	72.9	18.2
Detroit	12.6	12.5	99.2	90.1	15.8	17.5
Los Angeles	13.2	9.4	71.2	60.2	18.3	30.4
Philadelphia	28.1	21.3	75.8	52.3	13.3	25.4
San Francisco	18.0	15.7	87.2	21.7	11.7	53.9
Washington	1.0	.8	80.0	35.9	12.3	34.3
Boston	11.0	8.0	72.7	26.0	8.1	31.2
Cleveland	4.2	4.0	95.2	32.3	4.4	13.6
Total	$269.1	$190.0	70.6	$1,286.6	$316.5	24 ¢

TABLE III. TOTAL RECOVERABLE VALUE (CALLS, MATURED, PLUS MARKET VALUE OF OUTSTANDING SECURITIES) OF REAL ESTATE SECURITIES COMPARED TO TOTAL FACE VALUE

(Amounts in Millions of Dollars)

City of Offering	Amount	Total Recoverable Value	Percentage Recoverable to Face Value
New York	$974.0	$509.6	52.3%
Chicago	547.1	213.3	39.0
Detroit	145.4	71.0	48.8
Los Angeles	104.2	58.5	56.1
Philadelphia	94.2	48.4	51.4
San Francisco	69.5	57.2	82.3
Washington	66.6	42.8	64.3
Boston	54.5	33.6	61.7
Cleveland	54.0	25.9	48.0
Total	$2,109.5	$1,060.3	50.3

able value (calls, matured, plus market value of outstanding issues) with the total face value. Investors in San Francisco securities could have recovered about 82 cents on the dollar or 18 cents more than the figure for Washington, the next best city. Holders of securities issued in New York could recover slightly more than the average for the group. The large volume of New York issues, of course, weighed heavily in determining the average figures for the group. Investors in Chicago issues suffered heavily, recovering only 39 cents on the dollar.

For securities of the eastern cities as a group, purchasers could have recovered 53.3 cents on the dollar; for the mid-western cities, 41.6 cents; and for the far western cities, 66.6 cents on the dollar. The average for the nine cities was 50.3 cents, practically the same as for the country as a whole. Those who bought securities issued in cities not included in this study therefore fared substantially the same as purchasers of metropolitan issues.

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How to Make a Real Property Survey

THE combined efforts of several "new deal" agencies have resulted recently in a substantial contribution to the field of real property research. *Technique for a Real Property Survey*[1] was prepared jointly by the Coordinating Committee of the Central Statistical Board and the Works Progress Administration; and the Division of Economics and Statistics of the Federal Housing Administration, assisted by the Federal Emergency Relief Administration, the Federal Home Loan Bank Board, and the Public Works Administration. This three-volume "Baedeker" is a by-product of the Real Property Inventories made in 1934. Many communities became aware of the possibilities of continuing and expanding these early surveys as local work-relief projects and pressed for a standardized plan which would simplify and coordinate the work.

The schedules and instructions used in the Real Property Inventories, the Financial Survey of Urban Housing, and the F.E.R.A. projects were studied carefully and considerably revised and amplified. They were then subjected to test in 11 communities in West Virginia and Pennsylvania during the winter and spring of 1935. From the results of these tests this comprehensive technique was evolved[2] which describes in detail each operation from the initial steps in stimulating local interest to the presentation of the data in tables and on maps.

Volume I is an explanation of how to gather the data; Volume II contains instructions for tabulating the data; and Volume III is a collection of sample tabulation and general survey sheets. The steps to be taken and the personnel needed are outlined in Volume I which also gives instructions to the city director, the filing section, control section, mapping section, squad leaders, enumerators, checking sections, surveyors on land-use survey, and the mapping section. The first part of Volume II gives de-

[1] Part I, Survey Procedure; Part II, Tabulation Instructions for Dwelling Survey; Part III, Block Tabulation and General Survey Tables 1 to 16. Mimeographed. (Washington, D. C., 1935.)

[2] The article by Lawrence N. Bloomberg, "'Undoubling' of Families and the Demand for Housing Units," 12 *Journal of Land & Public Utility Economics* 80-82 (February, 1936) presented the results of one of these test surveys and explained the techniques employed in defining so-called "extra families."

tailed instructions for tabulating the raw data gathered according to instructions in Volume I. These operations summarize the figures from the individual cards by blocks and by economic areas, as well as for the entire metropolitan area. Parts II to VII in this volume develop the 16 final tables into which the complete data are assembled.

The importance of accurate current information on housing and land utilization in any community cannot be too greatly stressed. Industrial concerns have made and used extensive market studies for years. In no field which touches the needs and happiness of human existence so closely has there been such a dearth of factual information as in the business of shelter. The first step in attacking the social and economic problems related to housing is to obtain dependable data on existing conditions. This requires a statistical census or real property survey taken periodically according to a standard methodology to bring about uniform comparable conclusions for different cities and different years. Although the *Technique for a Real Property Inventory* is somewhat formidable in its three volumes and unwieldy in size (Volumes I and II are of standard size but Volume III is folio), the work is the first ambitious attempt to systematize and methodize the collection and presentation of local housing information. A supplementary volume on the interpretation of the data would have rounded out its completeness and added to its importance.

CARRIE MAUDE JONES

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The AAA Decision and the Soil Conservation Act

THE decision of the Supreme Court in the AAA case (*United States* v. *Butler*, January 6, 1936) answers for the first time a question which has troubled lawyers for many years, namely: the purposes for which Congress may properly spend the government's money.

The Constitution says, "Congress shall have power to lay and collect taxes . . . to pay the debts and provide for the common defense and general welfare of the United States." Exactly what does this mean?

It has been clear to lawyers for a long time that the reference to the general welfare does not mean that Congress may do anything it pleases to promote the general welfare. The National Government is one of specified powers and has legislative authority only in the fields stated in the Constitution. The reference to general welfare is part of the taxing power and is limited to that power.

The question that has been in doubt for many years is whether Congress may tax (and therefore spend) for any purpose whatever that promotes the general welfare, or whether its expenditures must be limited to those subjects which it has power to regulate under the other granted powers. Alexander Hamilton defended the first of these views and James Madison the other, and the difference between them has never been adjudicated until the AAA case. In the AAA case the Court held that Hamilton was right; in other words, that the language in question means that Congress may spend for any purpose that in fact promotes the general welfare, whether or not the object of its expenditure is something which it could regulate in other ways.

The Court assumed, without deciding, that the promotion of agricultural prosperity is a form of promoting the general welfare, and that therefore expenditures by Congress to promote agricultural prosperity are proper.

The Court, however, found the act invalid on the ground that it invaded the reserved powers of the states. Congress has no power as such to *regulate* agricultural production. That power, if it resides anywhere in American governments, resides in the state governments. Since it is not granted to Congress it is a power "reserved to the States respectively or to the people" under the Tenth Amendment. The Court found that the major purpose of the processing taxes, benefit payments, and accompanying contracts was to regulate the quantity of agricultural production. Since this is not among the powers of Congress, it was held that the plan as a unit, that is, taxes, contracts, and benefit payments, violated the Tenth Amendment and was therefore invalid.

The point of the decision, in other words, is not that it is beyond the power of Congress to promote agricultural prosperity by spending money. The point is rather that the particular plan and method adopted—taxes, contracts, and benefit payments combined—are a regulation of a state matter and therefore forbidden to Congress.

The interesting question now is the effect of this decision upon the Soil Conservation Act approved February 29, 1936 (Public No. 461, 74th Congress). This Act contains two distinct parts, and the effect upon them of the decision may be different.

Section 7 of the Act—the so-called permanent program—provides for grants to states to be administered by states, subject to certain standards set up in the Act, which are to be enforced by the Secretary of Agriculture. The state plans contemplated must be such as to carry out the purposes of the Act, namely: (1) preservation and improvement of soil fertility; (2) promotion of the economic use and conservation of the land; (3) diminution of exploitation and wasteful use of soil resources; (4) protection of rivers and harbors against the results of erosion; and (5) reestablishment of the prewar ratio between agricultural and other purchasing power.

None of these purposes, except possibly the fourth, are within any granted power of Congress. It might be argued, therefore, that the proposal to spend money to accomplish them through the device of encouraging state action is just like AAA—an in-

vasion of the reserved powers of the states and a violation of the Tenth Amendment. That argument seems to be answered by the decision of the Supreme Court in the case of the *Commonwealth of Massachusetts* v. *Mellon*, 262 U. S. 447, decided in 1923. In that case the State of Massachusetts attacked a somewhat similar plan of aid to states in relation to maternity and infant welfare on the ground, among others, that the Act invaded the right of Massachusetts to deal with those subjects itself in the way that it saw proper. The Court held "that the powers of the State are not invaded since the statute imposes no obligation but simply extends an option which the State is free to accept or reject . . . If Congress enacted it [the statute] with the ulterior purpose of tempting them [the states] to yield, that purpose may be effectively frustrated by the simple expedient of not yielding." This seems to dispose of the argument against Section 7 of the present Act, and it may therefore be stated with some confidence that Section 7—the permanent plan—is valid.

Section 8, the so-called temporary plan, deals with the immediate present and future. Until states have had an opportunity by legislative action to adopt plans under Section 7, Section 8 provides that the Secretary of Agriculture may deal directly with farmers, by grants of money and other aid, to accomplish the purposes of the Act as previously set out. What is the effect upon this of the AAA decision?

As previously stated, none of the declared purposes of the Act, except possibly number 4, are within any of the granted powers of Congress. That does not mean, as we have seen, that Congress may not spend money to accomplish them if they are within the general welfare, as they clearly seem to be. It does mean that such expenditures by Congress must not be in such a form as to "regulate" the conduct of individuals within the states.

The only substantial difference in this respect between the original AAA provisions and the present ones are: (1) that no specific tax is allocated to the service of these payments, and (2) that no advance contract with landowners is to be made. The payments are to be made to persons who meet certain standards after they have met the standards and without any previous promise on either side.

The first ground—no specific tax—will no doubt make it technically difficult for any particular taxpayer to show a sufficient interest in the expenditures to acquire a standing in court to attack them.

The second ground is clearly based on one sentence in the opinion of the Supreme Court in the AAA case. Mr. Justice Roberts in that opinion said: "There is an obvious difference between a statute stating the conditions upon which moneys shall be expended and one effective only upon assumption of a contractual obligation to submit to a regulation which otherwise could not be enforced." Section 8 of the Act, by expressly denying to the Secretary the power to enter into any contract binding upon any producer, is an obvious attempt to take advantage of this sentence in the opinion.

The "obvious difference" stated by the Court to exist between the two situations is not otherwise elaborated, and the basis of it is perhaps not altogether clear. All that can be said now is that the Congress has taken the Court at its word and has attempted to express in legislation the difference which the opinion seems to say would render the arrangement valid. Only future cases can determine whether the effort is constitutionally successful.

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Changes in Farms and Farm Tenure, 1930–1935

AT NO time in our history have there been so many "upsets" in agricultural trends as during the past 15 years. In the first 10 years after the war we seemed to be going in the direction of a smaller farm population and a diminished agricultural industry, but in the last five years this trend has apparently been completely reversed. The proportion of tenant-operated farms also increased alarmingly until 1930, and now for the first time there seems to be a decrease in the percentage of farm tenancy. These and other trends have been revealed by the 1935 *Census of Agriculture*.

Farm Population

The agricultural depression after the world war, accompanied by relatively greater

prosperity in the cities, was primarily responsible for the decrease in number of farm people. Always two streams of migration are flowing between city and country, one a stream of rural people moving to the cities which is the proverbial "rural exodus," and the other a less well known movement from urban centers to the farms. In 1920, for instance, about 896,000 people left the farms for the cities, but there was a counter-migration of 560,000 people from the cities to the country, leaving a "net" cityward movement of some 336,000 persons.[1]

This excess cityward movement would eventually deplete rural population were it not for the rapid natural increase of farm people. In spite of the net loss of over ⅓ million people in 1920, there were 89,000 more people on farms January 1, 1921 than on January 1, 1920. However, in 1922 the *net* cityward migration reached 1,137,000 persons, and, although the movement tended to taper off toward the end of the decade, the total number of people on farms soon began to be affected. The cumulative result of this exodus was a decrease of almost 1½ million farm people between 1920 and 1930. This multitude included not only the surplus children but farm operators were also leaving the countryside. This is shown in the decrease of about 160,000 farms during this decade. The severest decreases occurred in the urbanized states. New England lost 20% of her farms, the Middle Atlantic states 16%, and the East North Central states almost 11%. Other areas with farm decreases were the marginal areas and certain southern states, notably Georgia and South Carolina, which lost about 18% of their farms in 10 years.

Since 1929 the rural exodus changed to a flight to the land. Even in 1930 the *net* migration to the farms was 17,000, which increased to ½ million by 1932. However, in 1933 and since that time the farm-to-city surplus has been reestablished. The net result has been an increase between 1930 and 1935 of 2,610,000 in farm population which now exceeds that of 1920 by 1,165,000. This accumulation of people on the farms is primarily attributable to (1) the surplus of young people which has been "dammed up" on the land and which normally would have gone to the cities, and (2) to the "back-to-the-land" movement of city people.

Census data are corroborated by school census figures for 12 states studied by B. W. Allin and K. H. Parsons. The school censuses indicate a migration from the marginal areas to the cities during periods of urban prosperity, but during an urban depression the same areas become places of refuge. Here land is vacant and cheap and abandoned farm buildings can be used for "squatting." Naturally this places a crushing burden on local institutions of the "problem areas" and creates a serious relief problem.[2]

Number of Farms and Acreage of Farm Land

Just as significant as changes in farm population are the fluctuations in number of farms and amount of land in farms. Shortly before 1900 we had the largest expansion of agriculture in terms of acres and men we have had in our entire history; after 1900 there was a decided slowing up of new acres and additional farms. After 1920 the nation continued to lose farms for 10 years and "land in farms" for five years (1920-25). Since 1930, however, the number of farms has increased by more than ½ million and acres of land in farms by 68 million. Almost ½ of this increased farm acreage was added in the West South Central and Mountain states. Only two states reported a decline in area of farm land (Nevada and California), although both had an increase in number of farms. Only two states had decreases in the number of farms (Georgia and Mississippi), yet both reported considerably more land in farms than five years ago. The same urbanized areas which lost farms before 1930 reported heavy gains in 1935. New England acquired 33,000 new farms, a gain of 27%; the Middle Atlantic states had a gain of 11.2%; and the East North Central states over 12%. Ohio reported an increase of 35,800 farms. Other areas with extraordinary gains were the marginal lands. In parts of the Appalachians the number of farms doubled, whereas the predominantly agricultural states experienced only moderate increases.

However, the figures on farms and farm population as reported by the various censuses must be used with discrimination.

[1] *Yearbook* of the United States Department of Agriculture, 1935, p. 674.

[2] *Land Policy Review*, U. S. Department of Agriculture, March and June, 1935, Supplement (Mimeographed).

Although the instructions are to exclude any tract of less than three acres "unless its agricultural products in 1934 were valued at $250 or more," enumerators may vary widely in their interpretations, to say nothing of actual omissions resulting from careless or inefficient enumeration. The expansion of "part-time farming" during the last decade has added to the difficulty. It is entirely possible for the same tract to be correctly enumerated as a "farm" in 1935 and correctly omitted in 1930. If the owner was fully employed in 1929, he might have used his tract merely for a garden, but as an unemployed man in 1935 he probably used his time and land to grow crops for his subsistence or for sale. If he raises products "valued" at $250, he is classed as a farmer. If trained research workers have not yet found an adequate definition for part-time farming, it is not strange to find differences among census takers.[3] These various factors may have been responsible for "under-enumeration" in 1930 and "over-enumeration" in 1935. Otherwise it is difficult to explain the increase of 15,000 farms in Connecticut since 1930, almost ½ the entire increase for New England and more than that of any one Pacific Coast state.[4] It is hardly necessary to emphasize the fact that the accuracy of all other agricultural data, including that of tenure, can be no greater than the accuracy of the enumeration of farms.

Changes in Land Tenure, 1930-1935

The most notable fact in the tenure trend since 1930 is the increase in owner-operators. While tenants increased by about 201,000, owner-operators increased by 331,000, enough to reduce the proportion of tenants from 42.4%, as it stood in 1930, to 42.1% in 1935—the first decrease in the percentage of tenancy to be reported since 1880.

The trends of the past five years become still more striking if the states are grouped as was done in the two previous articles in this series, and changes in tenure correlated with changes in the number of farms.[5] Table I shows the basis of the grouping and the number of states in each group in 1920, 1930, and 1935. Chart I shows the grouping for 1935 with the percentage of tenancy for that year and for 1930.

In 1935, 40 states showed increases in number of farms, both owner- and tenant-operated. In 34 cases the increase in the number of tenants exceeded that of owners sufficiently to cause a rise in the proportion of tenant-operated farms. These states are found throughout the North and West. The surprise came in the South. Here six states likewise had increases in farms, but in the race between owner-operated and tenant-operated farms the former increased faster than the latter, with the result that these states have a smaller percentage of tenant-operated farms today than five years ago. Thus 40 states are in Group I in 1935 as compared with only 6 in 1930 and 9 in 1925.

Although the total number of farms in Texas and Arkansas increased, there was an absolute *decrease* in tenant farms accompanied by a substantial increase in owner-

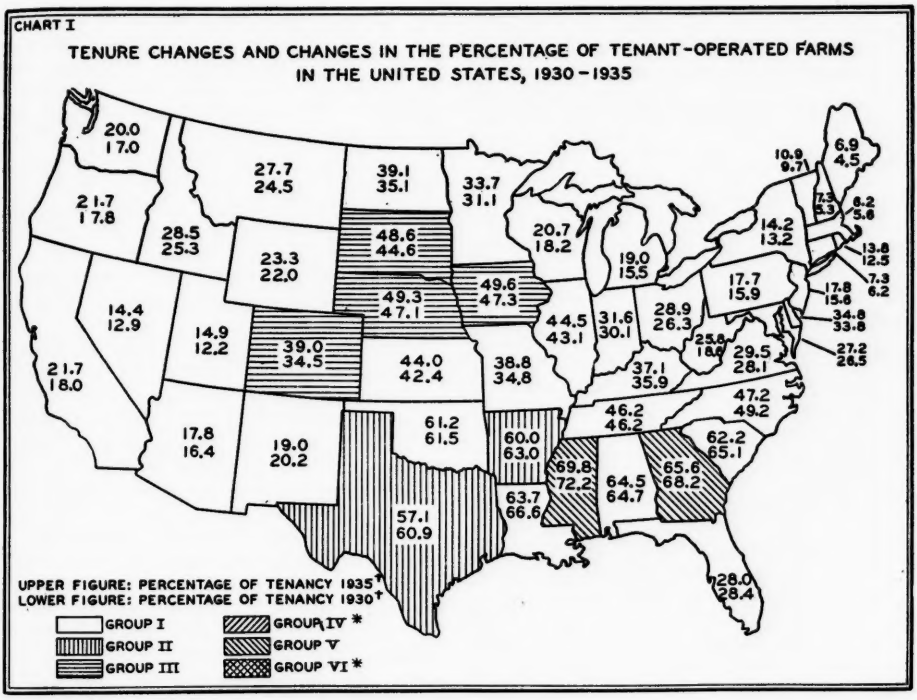
[3] L. A. Salter, Jr., "What is Part-Time Farming?" 18 *Journal of Farm Economics* 191-7 (February, 1936).

[4] I. G. Davis, "A Discussion of the Accuracy of Agricultural Census Enumeration in the Northeast," 28 *Journal of the American Statistical Association* 272-285 (September, 1933).

[5] See "Changes in Farm Tenure, 1920-1925," 3 *Journal of Land & Public Utility Economics* 104-107 (February, 1927) and "Changes in Farm Tenure, 1925-1930," 10 *Ibid.* 95-98 (February, 1934).

TABLE I. INCREASES AND DECREASES IN THE NUMBER OF FARMS IN VARIOUS TENURE GROUPS AS SHOWN ON CHART I.

Group	Change in Number of Farms			Change in Percentage of Tenancy	Number of States in Each Group		
	All	Owner	Tenant		1925	1930	1935
I	+	+	+	+ or −	9	6	40
II	+	+	−	−	11	0	2
III	+	−	+	+	6	12	4
IV	−	−	+	+	8	14	0
V	−	+	−	−	7	0	2
VI	−	−	−	+ or −	7	16	0



*None in 1935.
†Percentage of tenancy for the United States, 1935, 42.1%; for 1930, 42.4%.

operated farms. This seems to indicate an actual shift from tenancy to ownership and a reduction in the percentage of tenancy (Group II). Two other southern states have an even more remarkable record. Mississippi and Georgia have lost farms since 1930; in fact, Georgia has been losing farms since 1920. In these 15 years there has been a decrease of over 60,000 farms in this State, more than there were in the entire state of Florida in 1930. In the last five years Georgia lost 5,000 farms, lost 10,000 tenant farms, but *gained* slightly over 5,000 owner farms, thereby decreasing the percentage of tenancy from 68.2% in 1930 to 65.6% in 1935. Mississippi experienced the same changes and therefore has a lower proportion of rented farms than five years ago (Group V).

Although the prolonged agricultural depression began to have its repercussion on the land tenure pattern in 1925, the percentage of tenant-operated farms changed very little between 1920 and 1925, rising from 38.1% to 38.6% in these five years. But by 1930 the proportion of tenant farms mounted to 42.4%, a greater increase than had taken place during the entire first quarter of the present century. It was predicted that this increase would continue or even be accelerated as agriculture felt the effects of the depression more and more.[6] This prediction has come true as far as the North and West are concerned. In the New England and Middle Atlantic states the trend toward owner operation, which began in 1900, has been reversed completely. In most of the other states the increase in the percentage of tenancy has continued. Four of these states (Group III) are in a class by themselves. They lost owner-operators in spite of a general increase in the number of farms and added to their number of tenants. All in all, 36 states had an increase in the proportion of tenant-operated farms and in only 12 has the percentage of tenancy de-

[6] M. M. Kelso, "A Critique of Land Tenure Research," 10 *Journal of Land & Public Utility Economics* 391-402 (November, 1934).

clined since 1930.[7] All 12 are in the South and Southwest, stretching from New Mexico to North Carolina inclusive, and so great was the reversal of the former trends that the trend for the entire nation has been reversed. For this reason the situation in the South merits further analysis.

Changes in Tenure in the South

The 16 states comprising the South have slightly over ½ of all the farmers in the United States. Five of them increased their proportion of tenants but all the rest experienced a striking decrease during the past five years. The tenure situation is influenced by the presence of 91% of all the colored farmers of the United States who make up about 27% of the total number of farmers. Furthermore, the plantation and cropper tenure status is peculiar to the South. Under the plantation type of farming the entire holding may be plowed and prepared as a unit, but individual tracts are rented to tenants or croppers for planting, cultivation, and harvesting. These individual parcels are called "farms" by the *Census*. Should the plantation owner decide to operate his land with hired labor, then the entire property becomes one "farm." Perhaps the same croppers work for the owner as laborers, yet technically some 20 tenants or croppers have disappeared and the number of farms declined from 20 to one. Changes in the area rented per farmer will likewise enlarge or reduce the number of croppers or tenants.

Table II shows the changes in number of farmers in the main tenure classes in the South since 1900. The figure for "total farmers" includes owner-operators, managers, tenants, and croppers; farm laborers are not classified as "farmers" by the *Census*. Only four classes of farmers are listed in the table; managers are omitted because of their small number.[8] In making comparisons it should be noted that "tenants" as used in this table include croppers, even for the years 1920 to 1935 inclusive. The total number of farmers has increased over the entire 35 years with the exception of the 1920-25 period. White farmers, however, increased without any interruption, whereas colored farmers reached a peak in 1920. There was an upturn after 1925, but the decline since 1930 has been so drastic that today colored farmers in the South number only 10% more than in 1900. White farmers, on the other hand, have increased 40%. According to these trends, colored farmers are being displaced by the whites.

Since owner-operation is considered the goal of the agricultural ladder, with tenancy a lower rung and "cropper" status just a step above the laborer stage, it is important to consider the trends in these three forms of tenure for both the white and colored farmers. In spite of all other trends white tenants have increased without interruption since 1900, numbering now 65% more than 35 years ago. White owners increased until 1920, decreased during the next decade, and then spurted upward again, resulting in an increase of 17% during the 35-year period under consideration here.

[7] Tennessee had the same percentage of tenancy in 1935 as in 1930 and is included in this group.

[8] "Managers" represent the smallest tenure class mentioned in the *Census*, constituting less than 1% of the 6,812,350 farmers in the country. In 1935 there were only 48,104 managers in the United States, a decrease of 7,785 since 1930. In only six states did the number of managers increase, thus moving against the general trend.

TABLE II. NUMBER OF FARMERS IN THE SOUTH 1900 TO 1935 BY TENURE CLASSES
(in Thousands)

Tenure Classes	1900	1910	1920	1925	1930	1935
Total Farmers	2,620	3,097	3,207	3,131	3,224	3,422
White Farmers	1,880	3,207	2,284	2,300	2,342	2,606
White Owners	1,184	1,326	1,380	1,325	1,234	1,389
White Tenants*	679	866	888	965	1,092	1,202
White Croppers	.....	.....	227	279	383	348
Colored Farmers	741	890	923	831	882	816
Colored Owners	187	218	218	195	182	186
Colored Tenants*	552	670	704	636	699	629
Colored Croppers	.....	.....	334	344	393	368

* Croppers are included in figures for this class.

Colored owners, on the other hand, reached a peak in 1910, remained at that level in 1920, and then declined until in 1930 there were fewer colored owners in the South than in 1900. But an increase of about 4,000 between 1930 and 1935 has brought the total number practically back to the level of 1900. Negro tenants increased until 1920, when the famous migration to the North caused a loss of about 67,000 tenants by 1925. No doubt the lure of jobs "up North" accelerated the decrease in negro owners as well. The trend of negro tenants was upward again between 1925 and 1930, only to be changed to another loss during 1930-35. There are fewer colored tenants now than 25 years ago, and only 13% more than in 1900. Colored farmers in the two highest tenure groups are losing their former place in the South.

Croppers were reported separately for the first time in 1920. At that time 37% of the white tenants and 48% of the colored tenants were croppers. White croppers continued to increase in numbers until 1930, but the 1935 *Census* reported a drastic reduction in spite of the continued increase of other tenants. Since owners and tenants increased during this period, this suggests an upward movement on the agricultural ladder all along the line. On the other hand, the new owners might have been recruited from the influx of subsistence and part-time farmers on the margins and the croppers might have disappeared because of readjustments on the plantations. Further analysis of the data for each state is necessary.

In spite of the decrease of negro farmers after 1920, the number of colored croppers continued to increase until 1930. This indicates a shift from other tenure stages to that of cropper for at least the first five years of the 1920-30 decade. Since 1930 colored croppers have declined by over 24,000. They could not have entered the ranks of tenants in any large numbers because this class is smaller than it was five years ago. The increase in the number of colored owners suggests that some of them might have become owners; this is doubtful, though not impossible. The more probable explanation is that they have become laborers or are on relief. Evidence indicates that both white and colored tenants have been displaced as a result of the readjustments in agriculture since 1930[9]. This is denied by other observers. At any rate the subject is a challenge to the student of land tenure.

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[9] *Land Policy Review, op. cit.*, pp. 2-3, March, 1935. See also Gordon W. Blackwell, "The Displaced Tenant Farm Family in North Carolina," *Journal of Social Forces*, October, 1934; and Johnson, Embree and Alexander, *The Collapse of Cotton Tenancy* (Chapel Hill: University of North Carolina Press, 1935).

Planning and Zoning in the State of Washington

THE State of Washington has joined the ranks of forward-looking states by enacting legislation authorizing rural planning and zoning. The larger cities of the State have had zoning regulations for some time, but this is the first attempt to extend such control measures to the open country.

The new law, enacted last year,[1] has two purposes. The first is to set up county and city planning commissions; the second is to provide the legal basis on which municipalities or parts of municipalities[2] may be zoned in order that their development may be less haphazard and more in line with the best interests of the State as a whole.

The Act, sponsored by the State Planning Council, permits cities and counties to form planning commissions consisting of from 3 to 12 members. Appointments are to be made by the mayor or chairman of the board of county commissioners with the approval of the city council or county board. Terms in office for the first appointees vary so as to have as few as possible expire in any one year, and subsequent appointees shall serve for six years. Not more than ⅓ of the commission may be elective officers of the municipality.

The city or county provides the necessary funds for such work as its commission carries on. From these funds the necessary employees and expert consultants are hired.

[1] Rem. Rev. Stat. 1935, c. 20-A.

[2] The law defines municipalities as, "Any or all counties, cities or towns of the State of Washington."

Members of the commission serve without compensation and are selected without regard for political affiliations.

These planning commissions act as the fact-finding agencies for the city or county and are authorized:

1. "To make inquiries, investigations, and surveys concerning the resources of the county.
2. "To assemble and analyze the data obtained and to formulate plans for the conservation of such resources and the legitimate utilization and development thereof.
3. "To make recommendations from time to time as to the best methods of such conservation, utilization and development.
4. "To cooperate with other commissions, with the State Council and with other public agencies of the municipality, state, and United States, in such planning, conservation and development; and
5. "In particular to cooperate with and aid the State Council within its territorial limits in the preparation of the state master plan, and in advance planning of public works programs."

Realizing that many of the problems to be faced by these county or city commissions extend beyond their jurisdiction, the writers of the bill provided that county planning commissions might form regional organizations having the same powers and duties as city or county commissions.

The planning commissions set up by this Act are intended to be the moving forces in zoning programs as authorized by the Act. It is provided that the county or city may authorize its commission to make plans for the physical development of such municipality. The authorization for zoning is given in the section which provides,

"For this purpose [physical development] such Council or Board, in such measure as is deemed reasonably necessary or requisite in the interest of health, safety, morals, and the general welfare, upon recommendation by its commission, by general ordinances of the city or general resolution of the Board, may regulate and restrict the location and use of buildings, structures and land for residence, trade, industrial, and other purposes; the height, number of stories, size, construction and design of buildings and other structures; the size of yards, courts and other open spaces on the lot or tract; the density of population; the set back of buildings along highways, parks or public water frontages, and the subdivision and development of land."

It is further provided that,

"For any or all such purposes any such Council or Board, on recommendation of its commission, may divide the municipality or any portion thereof into districts of such size, shape and area, or may establish such official map or maps, or development plans for the whole or any portion of the area of such municipality as may be deemed best suited to carry out the purposes of this act; and within such districts it may regulate and restrict the erection, construction, reconstruction, alteration, repair or use of buildings, structures or land."

Many parts of this law merely extend to the open country certain regulations previously in effect only in urban areas. There are a few new additions. Among them is provision for the control of the density and location of population which may be applied to either rural or urban districts. The law is forward-looking but in places seems inadequate. Specific authority is given for zoning residential, trade and industrial uses, but no direct mention is made of agriculture, forestry, or recreation. Rather these and other uses of land have been lumped together under "other purposes," but it is doubtful if the courts would uphold a specific zoning ordinance based on such generalized phraseology.[3] A broad interpretation of the present law would allow agricultural, forestry, or recreational zoning, but it is not believed likely that any such regulatory measures will be forthcoming until the law is amended to provide specifically for them.

An act providing for zoning for agricultural, forestry, and recreational uses failed to pass the Legislature at the same time the present law was enacted, primarily because the state program of land classification was in its infancy and the need for such advanced legislation was not apparent to the legislators.

Now with the classification of one county practically complete and the work in several others well started, the need for such a measure is very apparent to all and it is believed that either the present law will be changed or a new law will be passed to provide for agricultural and allied types of zoning.

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[3] The law says, "The board may regulate the use of land for residence, trade, industrial, and *other purposes.*"

Public Utilities Department

E. W. MOREHOUSE, *Editor*

The T. V. A. Decision of the United States Supreme Court

ON February 17, 1936 the United States Supreme Court rendered its long awaited decision in the Ashwander case.[1] This case grew out of the first significant step taken by the Tennessee Valley Authority in carrying out a power policy first announced during the summer of 1933. This step was the negotiation of a contract on January 4, 1934 with the Alabama Power Co., a Commonwealth and Southern subsidiary, which provided for purchase by the Authority of certain lands, substations, transmission lines, and auxiliary properties located within a radius of 50 miles from Wilson Dam at Muscle Shoals, Alabama. The purchase price was fixed at $1,150,000. In addition, the contract provided for the interchange of electric energy, for the sale of surplus power from Wilson Dam at stated rates, and for mutual territorial restrictions as to the areas to be served. A supplementary agreement made in August, 1934, whereby the Company gave the Authority an option to acquire certain urban distribution systems, had been terminated and was not involved in the case.

Application for annulment of the contract had been made by certain preferred stockholders in the Federal District Court of Alabama. Their contention was that the contracts were injurious to the interests of the Company and their subject matter beyond the constitutional power of the Federal Government. In finding for the stockholders, Judge Grubb had issued a sweeping injunction. The Authority appealed to the Circuit Court which reversed the lower court, holding in substance that since Wilson Dam had been constructed under the war and interstate commerce powers of the Congress, electric power produced at the dam was the property of the United States and subject to the disposition of Congress.

In arguing the appeal before the Supreme Court, the attorneys for the Government had urged among other things that the suit by the preferred stockholders had not been brought in good faith. But the Supreme Court, healthy political organism that it is, decided not to let the decision be warped by a technicality, thus clearing the ground of a preliminary contention by holding that the stockholders were entitled to maintain the suit. A concurring opinion written by Mr. Justice Brandeis appeared, however, to lay greater weight upon this point.

In all essentials, the Supreme Court agrees with the Circuit Court. It limits the issues to be decided to the single one of the validity of the above mentioned contract. It also waived aside the somewhat hysterical arguments made by the attorneys for the stockholders, that, if the Government could go into the business of selling electric power on the theory that it was disposing of a surplus, it might also be tempted to go into the business of producing steel, clothing, or shoes because electric power is consumed in such production.

Returning to the main argument, the Court reviews the circumstances of the construction of Wilson Dam, beginning with the National Defense Act of 1916 and finds no difficulty in bringing this federal activity within the constitutional limits of the war power. But the Court finds a dual basis for sustaining the construction of Wilson Dam and appurtenant power house by bringing it also within the limits of the power of Congress to regulate commerce. Since this power embraces the power to keep the navigable rivers of the United States free from obstructions to navigation, the construction of Wilson Dam in the Tennessee River, a navigable stream, is brought within the purview of this power as well. Certainly, the Court is justified in this inference because the improvement of the Tennessee "has been a matter of national concern for over a century."

Having established the constitutionality of the construction of Wilson Dam, the Court points out that the Government acquired full title to the dam site with all the riparian rights. These rights include the power to appropriate through power plants the energy of falling water, a utility "inevitably incident" to dam construction.

[1] *Tennessee Valley Authority, et al* v. *George Ashwander, et al.*

This electric power is the property of the United States, constitutionally acquired, which may be disposed of constitutionally under Section 3, Article IV. The only question that may be raised concerns the scope of this grant of power of disposal.

There follows a brief review of the constitutional history of this grant of power to dispose of property, especially in relation to lands and mineral rights, with which the reserved rights of states are not found to conflict. Then, coming to the matter involved in the instant case, the Court raises the question whether a more limited policy should be adopted with respect to surplus water power. The categorical answer is in the negative because such a limitation is dictated neither by the nature of the particular property, nor by the character of the surplus to be disposed of, nor by the manner of its disposition. It is especially heartening to see the Court brush aside the foolish interpretation of surplus given by Judge Grubb which limited the same to that necessarily created in making munitions of war or operating works for navigation purposes. Very definitely the Court holds that the available energy need not be lost nor wasted.

The final point is of some moment because it concerns the selling policy authorized in the Act and was adopted by the Authority under the contract. The general standard is that the method of disposal must be appropriate to the nature of the property, adapted to the public interest, and consistent with the foundation principle of our dual system of government. The Court finds that the use of transmission lines as a method of overcoming a buyers' monopoly at the dam and reaching a wider market is consonant with this standard and does not invade any rights of states.

This decision of the Court is characteristic of our American mode of judicial procedure in that it builds onto the historical structure a new addition made necessary by this new departure in public policy. But the added structure is no larger than required. The Court disclaims any intention to pass upon more than this single act of the Authority. Consequently, both the opponents and proponents of the Tennessee Valley Project Act have found much to comfort them in this decision, the former in stressing the limitations, the latter in dwelling upon the promise for the future. To this reviewer, it appears that the future course of decisions will permit the Authority to extend its power policy pari passu with the realization of an integrated development of the River through flood-control and navigation dams, provided it keeps a weather eye on that shadowy line which separates its own domain from that of the states.

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Public Utility Financing in the First Quarter of 1936

AFTER a slow start in January, when only 3 issues were floated, public utility financing gained rapidly in the succeeding two months to reach a total of $424,778,500 for the quarter, according to compilations published by the *Commercial & Financial Chronicle*. The quarter's total was almost 6 times the $72,433,250 for the same quarter of 1935.

In many respects the characteristics of the quarter's financing were similar to those noted for the full year 1935.[1] Refunding issues predominated, 93¼% of the total being devoted to that purpose. Low coupon rates were also in the lead[2] and the majority of the issues were long-term mortgage debt obligations by operating companies.

Somewhat in contrast to results for 1935, however, is the fact that smaller companies became more active in financing as a result of continued improvement in business conditions and a continuation of low interest rates. During the first quarter of this year the debt issues ranged in size from $380,000 to $90,000,000, against a range of $400,000 to $73,000,000 during 1935. The weighted average amount per issue in 1936 was $16,940,000 which compared closely with the corresponding average of $16,970,000 for all of last year. Despite this situation, however, the median issue for the present

[1] For a review of 1935, see "Public Utility Financing in 1935," 12 *Journal of Land & Public Utility Economics* 91-94 (February, 1936).

[2] The weighted average coupon rate during the quarter was 3.70%. Individual rates ranged from 3% to 5¼%. With the exception of 6 small issues, none had a coupon rate in excess of 4%.

period was only $3,600,000 against one of $10,000,000 for 1935, which reveals more clearly that smaller issues have recently comprised a larger percentage of all issues.

Twenty-five individual issues were offered during the quarter. All but one of these were classified as long-term debt; the one short-term debt issue was for only $1,250,000. However, the 24 long-term issues included 2 with serial maturities.

No stock issues were sold during the period, but two small telephone bond issues were devoted to retirement of preferred stocks. Five issues aggregating $56,180,000 were placed privately; in this connection it may be noted that 2 of the 5, both by Duke Power Company and totalling $39,000,000, were taken by Duke University and Duke Foundation.

Table I presents a detailed analysis of the 17 long-term debt issues which were publicly sold during the first quarter. For the purposes of the table the two issues with serial maturities have been excluded. These 17 issues account for 86% of the quarter's total.

Reference to the table reveals that the average coupon rate was only 3.70% and the average yield to the public at the offering price was as low as 3.64%. Underwriters' commissions amounted to $2.25 per $100 principal amount and incidental expenses required an additional $0.58. The net proceeds per $100 principal amount thus averaged $98.26 and this net capital cost the companies 3.82% on the average.[3]

[3] This computation of cost does not take into consideration the call premium nor the unextinguished debt discount and expense on issues refunded by the current financing.

TABLE I. SUMMARY AND ANALYSIS OF LONG-TERM DEBT ISSUES OFFERED PUBLICLY (EXCLUSIVE OF SERIAL MATURITIES), FIRST QUARTER, 1936

Company and Issue	Coupon Rate	Principal Amount	Maturity Date	Month of Offering	Offering Price*	Offering Yield	Underwriters' Commissions*	Proceeds to Company*	Estimated Incidental Expenses*	Net Proceeds*	Cost to Company†
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)
	%				%	%	%	%	%	%	%
Pacific Gas & Elec. Co.											
First & Ref. Mtge., Series H	3¾	$90,000,000	12-1-61	Mar.	102½	3.60	2	100½	0.463	100.037	3.74
Eastern Gas & Fuel Associates											
First Mtge. & Coll. Trust.	4	75,000,000	3-1-56	Mar.	96¼	4.26	3	93½	0.493	93.007	4.54
Consumers Power Company											
First Mortgage	3½	55,830,000	11-1-70	Mar.	103½	3.30	2	101½	0.499	101.001	3.45
New York Edison Company											
First Lien & Ref. Mtge., Series D	3¼	55,000,000	10-1-65	Feb.	100	3.25	2	98	0.773	97.227	3.40
West Penn Power Company											
First Mtge., Series I	3½	27,000,000	1-1-66	Jan.	103	3.34	2	101	0.568	100.432	3.48
Connecticut River Power Co.											
First Mtge., Series A	3¾	20,300,000	2-15-61	Feb.	104½	3.48	1.221	103.279	0.690	102.589	3.59
Public Service Co. of Okla.											
First Mtge., Series A	4	16,000,000	2-1-66	Feb.	101½	3.92	2½	99	0.417‡	98.583	4.08
Central Ill. Light Co.											
First & Consol. Mtge.	3½	7,178,500	4-1-66	Mar.	104	3.29	2¼	101¾	0.507	101.243	3.43
Iowa Electric Company											
First Mtge., Series A	4	3,750,000	1-1-61	Mar.	98	4.13	3	95	0.843‡	94.157	4.39
Iowa Elec. Light & Power Co.											
First Mtge., Series E	4	3,600,000	12-1-55	Mar.	103	3.78	2½	100½	0.910†	99.590	4.03
Springfield City Water Co.											
First Mtge., Series A	4	2,700,000	4-1-56	Mar.	99	4.07	4	95	1.321	93.679	4.48
Indiana Assoc. Tel. Corp.											
First Mtge., Series B	4½	2,600,000	10-1-65	Mar.	102	4.38	3	99	1.363	97.637	4.65
Citizens Independent Tel. Co.											
First Mtge., Series A	4¼	1,450,000	1-1-61	Mar.	101	4.19	3¼	97¾	2.159	95.591	4.55
Penn-Jersey Water Co.											
First Coll. Trust	5¼	1,200,000	8-1-60	Feb.	97	5.48	6	91	1.639	89.361	6.09
Wabash Telephone Co.											
First Mtge., Series A	4½	1,000,000	1-1-56	Feb.	100	4.50	4	96	1.700	94.300	4.95
Lowell Gas Light Co.											
First Mtge., Series A	4½	950,000	3-1-66	Feb.	107	4.10	1	106	2.268	103.732	4.28
Cape & Vineyard Elec. Co.											
First Mtge., Series A	4	750,000	7-1-65	Jan.	103¼	3.82	1.981	101.269	1.907	99.362	4.04
Weighted Averages Totals§	3.70				101.09	3.64	2.25	98.84	0.58	98.26	3.82

* Expressed in per cent of principal amount as shown in column (C).
† Computed on a sinking fund basis using net proceeds per column (K).
‡ Pro rata share of total expenses of two issues apportioned on basis of principal amount.
§ Totals, which represent summation of actual amounts reported for individual issues, are as follows: Principal Amount, $364,308,500; Offering Price, $368,265,565; Underwrit-s' Commissions, $8,187,962; Proceeds to Company, $360,077,603; Estimated Incidental Expenses, $2,125,065; Net Proceeds, $357,952,538.

TABLE II. PART A. SUMMARY OF LONG-TERM DEBT ISSUES SOLD PRIVATELY, FIRST QUARTER, 1936

Company and Issue	Coupon Rate	Principal Amount	Maturity Date	Month of Sale	Price	Yield
	%					%
Duke Power Company First & Ref. Mtge.	3½	$30,000,000	12-1-67	Feb.	Not available	----------
Southern New Eng. Tel. Co. Debentures	3¼	16,000,000	4-1-66	Mar.	100½	3.22
Duke Power Company Notes	4	9,000,000	1946	Feb.	Not available	----------
Illinois Consol. Tel. Co. First Mtge., Series A	4¼	800,000	1-1-66	Jan.	100	4.25
Lewiston Gas Light Co. First & Ref. Mtge., Series C	3½	380,000	4-1-56	Mar.	99½	3.54
Total		$56,180,000				

PART B. SUMMARY OF ISSUES WITH SERIAL MATURITIES, FIRST QUARTER, 1936

	%					
Public Service Co. of Okla. Debentures	4	$2,000,000	*	Feb.	100 to 104.93	1.75% to 4.00%
Iowa Elec. Light & Power Co. 3% Coupon Notes	3	1,250,000	†	Mar.	100 to 102.59	0.75% to 3.00%
Iowa Electric Company 4% Serial Notes	4	1,040,000	‡	Mar.	96.01 to 105.05	1.00% to 4.50%
Total		$4,290,000				

* $200,000 each February 1, 1937-1946, inclusive. Underwriters' commissions on this issue were 1.25%. The company received an average price of 101.641%, and incidental expenses were 0.417%, leaving average net proceeds of 101.224%.
† $125,000 semi-annually from October 1, 1936 to April 1, 1941, inclusive. Underwriters' commissions averaged 0.50%; incidental expenses, 0.91%; and net proceeds, 100.34%.
‡ $52,000 semi-annually from October 1, 1936 to April 1, 1946, inclusive. Underwriters' commissions averaged 1.449%; incidental expenses, 0.843%; and net proceeds 99.157%.

The percentage rate of underwriters' commissions shows some inverse correlation with the size of issue, but greater correlation is found in the case of incidental expenses.

The cost of capital ranged from 3.40% to 6.09%, only 1 issue being over 5%. The low, 3.40%, is slightly below the lowest cost (3.43%) found during 1935, but one issue has already been offered in April, 1936 at an even lower cost.

For record purposes all issues offered during the quarter other than those given in Table I are summarized briefly in Table II.

Index Number of Volume

The index numbers[4] of volume of public utility financing for the first quarter of 1936 are as follows:

Period*	Total Capital	New Capital	Refunding Capital
January	17.41	1.16	87.55
February	82.59	0.13	438.67
March	159.02	20.27	758.10
1st Quarter	86.34	7.19	428.11

*The bases for these index numbers are as follows: monthly average, 1926, equals 100 for the monthly series; quarterly average, 1926, equals 100 for the quarterly series; and the year's total for 1926 equals 100 for the annual series.

Revised Index Numbers for 1935

In footnote 6 to the summary of "Public Utility Financing in 1935,"[5] it was stated that a revision of the index numbers for 1935 would be necessary in the event that further investigation confirmed the writer's opinion that one issue was duplicated in the 1935 compilations by the *Chronicle*. A change in the data for July, 1935 has made necessary the following revisions in the indexes as given in the preceding article:

Period	Total Capital	Refunding Capital
July, 1935	200.37	1,034.94
3rd Quarter, 1935	107.36	536.30
Year, 1935	64.72	321.62

No change occurred in the indexes of new capital.

[4] For a description of the index and back figures through 1919, see "The Volume of Public Financing, 1919-1935," 11 *Journal of Land & Public Utility Economics* 352 -356 (November, 1935).
[5] See footnote 1, *supra*, for citation.

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The Boonville Case

IN many states municipal utilities, being exempt from rate regulation, are permitted to earn just about what the traffic will bear unless competition exists. Since municipal governments can find almost unlimited uses for available funds, not all municipal utility rates are set at "yardstick" levels, nor is this fact necessarily attributable to high costs of operation or to inefficient management. As a result, many an imposing municipal park or building is pointed to with pride as having been built "without cost to the taxpayer." It has not, however, been built without cost to the ratepayer.

Heated controversy between those desiring low taxes and those desiring low electric rates has long been the case. Although there appears to be a general concensus that the amount of energy a citizen consumes is not a fair measure of his obligation to support the municipal government, there is little agreement on the question of whether the inclusion of a "fair return" in the costs to be met by electric rates constitutes a sales tax.

The Public Service Commission of Wisconsin, for example, has interpreted the laws of that State as intending that a municipal utility may earn a fair return. This fact is borne out by a perusal of many decisions emanating from that source in recent years, relating to rates and funds of municipal utilities.[1]

The New York State Public Service Commission in its Boonville case (5 P. U. R. (N. S.) 298; 8 P. U. R. (N. S.) 493), on the other hand, with very similar public utility laws, plunged into this question and emerged with the conviction that governments "are not created for the purpose of making profits." To the writer, however, this decision appears to be more a statement of what the Commission thought *ought* to be the case than what the Commission thought the laws of the State provided.

The New York State Supreme Court, in granting Boonville a stay against the enforcement of the Commission decision pending review by the appellate division (9 P. U. R. (N. S.) 265), stated in effect that a municipality operating an electric plant does so in a private or proprietary capacity, and in so doing incurs not only the same obligations, but also can expect the same privileges as private utility corporations. The court said:

"A taxpayer has an interest in a municipal plant similar to that of the shareholder in a plant owned by a private corporation and it would seem the business of supplying electricity by a municipality to its consumers should be dealt with in the same manner as that of any private corporation . . ."

Of particular interest is the following excerpt from a Pennsylvania court decision, quoted and apparently concurred in by the New York court, which expresses the conviction that a municipal utility cannot be deprived of its right to earn a fair return even by legislative action:

"If the legislature or the courts could deprive a plant owned by the municipality of a fair return. . . they could prevent a privately owned. . .company from earning a profit or a fair return." (Shirk v. Lancaster, 313 Pa. 158, 167; 169 Atl. 557 (1933).)

This opinion of the New York State Supreme Court should be reassuring to those municipalities operating their own utilities in states where regulation of such utilities is provided by statute. It should also be reassuring to proponents of municipal ownership, regardless of whether or not they believe it right for a municipality to include a fair return in the rates of its utility, since the possibility of so doing is often an important argument in the minds of the voting citizens. At least it is a frequent argument of the promoters.

The danger to the municipal ownership movement is not the possibility of the inclusion of a fair return in the costs of service; witness the comparatively low rates of small Wisconsin municipal utilities where this item is included as a cost. The danger lies in the practice, where strict regulation is not provided, of kiting rates beyond all reason, or as is usually the case, neglecting to reduce rates as reductions are justified, in order to provide funds to construct and operate imposing buildings or to pay all costs of local government without recourse to the property tax.

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[1] See H. Zinder and Walter E. Caine, "Regulation of Municipal Electric Utility Rates in Wisconsin, 1931-1934," 11 *Journal of Land & Public Utility Economics* 12 (February, 1935).

Municipal Utility Profits or Taxes?

WHAT is popularly known as the "taxless town" is, of course, nonexistent in fact. When a municipal utility charges rates sufficiently high to support the municipal government, in whole or in part, there is merely a shifting of the tax burden from the taxpayer to the utility consumer and the shift may or may not mean that the same people still pay the taxes in the same proportion. Under such a system the utility instead of some other governmental body becomes the tax collecting agency.

Even though the limited nature of the present study precludes making positive and general conclusions, it should be advantageous to review some of the general considerations involved in substituting municipal utility profits for direct taxes.

Of course, some real advantages accrue from using a utility to collect taxes. Taxes raised by this method are more easily assessed, returns are relatively constant, collection is simple, and the threat of discontinuance of service is probably as effective a collection device as loss of title because of unpaid taxes. In addition, this method certainly measures up to the popular tax maxim of "plucking the most feathers with the least squawking." For this reason it is conceivable that a particular official or board might sacrifice his or its political existence if rates were reduced to the point where taxes would have to be materially increased. It may not mean, however, that there is less reason for "squawking" under such a tax system. It may merely mean that the incidence of the tax is not realized or that the group upon which it falls is relatively inarticulate.

From the public point of view the incidence of such a tax is especially important. Since electricity is so widely used, practically everyone is a consumer and so contributes to the municipal tax fund when the utility is run for revenue purposes. The essential question becomes whether or not the tax falls upon consumers in an equitable manner.

For our purposes taxes may be classified as proportional, regressive, or progressive. In regard to social desirability, the first is commonly considered the minimum, while many advocate the progressive type. Regressive taxes may be promoted but their regressiveness is not given as a point in their favor.

On purely logical grounds it is difficult to determine what type of tax utility profits represent, or whether or not people use electricity in the same proportion as they receive income or pay property taxes. Electricity is so widely used that one might assume that use of electricity rates as a form of taxation would have regressive incidence similar to that of a general sales tax. However, the uses to which electricity can be put are almost unlimited and consumption may increase fully as rapidly as the total purchasing power of a consumer. So one must look farther if one is to determine whether this type of taxation is proportional, regressive, or progressive.

The New York Commission, in the Boonville decision discussed in this issue of the *Journal*,[1] has indicated its belief that consumers are not always taxpayers and, even when they are, they do not pay taxes in the same proportion as they buy electricity. In connection with their first objection, however, orthodox economics, assuming competition in the construction and renting of dwellings, teaches us that the taxes on rented houses and apartments are over a period of time approximately included in rent. So those residential consumers who do not pay property taxes directly pay them indirectly instead. However, if the municipal utility serves a rural area in addition to customers within the corporate limits, collecting taxes through electric rates would result in taxing rural customers for municipal expenses, which they would not otherwise have to bear, and without regard to possible benefits which may accrue to the payers. The second objection is worthy of more extended consideration for in it lies the most important phase of the question of whether or not a municipal utility should be run for purposes of profits in lieu of taxes. A common view seems to be that, as consumption is higher in larger houses, taxes collected through the utility are equitably apportioned.

Almost no mathematical tests have been made, however, to determine the incidence of a utility "tax." A short study made by

[1] Page 211 *supra*.

the Public Service Commission of Wisconsin involving 41 customers in two municipalities indicated, in general, that if municipal utilities increase the rates sufficiently to pay the cities' expenses it would result in a decided decrease in the local tax burden borne by many industries. This decrease would in turn have to be made up by residential and other consumers. Some industries would be entirely freed from contributing to municipal funds for they are being served by a private utility. As a matter of fact, if power rates were substantially raised, a municipality might lose practically all its power load, for the industries would substitute other forms of power, buy it from outside companies, or install their own plants.

This article, however, is chiefly concerned with a study made a few months ago in Winnetka, Illinois, a residential suburb[2] of Chicago, which owns its own electric plant and derives considerable revenue from its earnings. A check-up by the management relating the size of residence to electricity consumed indicated that consumption per room in this community was fairly uniform throughout the different sized houses. Since the rate schedule is based on the number of rooms in the house, the conclusion which might be drawn without investigating further is that it makes little difference whether taxes are paid directly or through electric bills. This conclusion is obviously based, however, on the assumption that the taxable value of a residence and surrounding property advances in the same proportion as the number of rooms, which is not necessarily true.

The writer's study is a direct comparison of utility bills and property taxes paid by a selected sample of consumers. In order to get a complete spread on the property taxes, customers owning all sizes of houses were picked. Random customers from all parts of the municipality were chosen in most of the house size-groups but because there were relatively fewer of the very large houses most of the customers living in them were taken. This procedure was followed in order to be able to obtain the relationship of taxes and utility bills throughout the different economic groups. In each group, however, the sample can be regarded as fairly typical. The property descriptions of the homes were then looked up and the corresponding general property tax assessments obtained. Because annual figures were not available, the June electric bill for each of the consumers was used in computations. These figures should give accurate results for, since June is almost an average month in Winnetka electrical consumption, the annual bill should be approximately proportional for the various groups of consumers. From these data one can infer whether or not taxes paid through utility bills are more or less regressive than the property tax, or the same.

There are, in general, two ways in which the values might be graphed: using the amounts of the tax and utility bills as obtained or using a ratio of one to the other for values along one axis. Lines expressing the average relationship would, of course, be different under the two methods and the ratio of specific electric bills to corresponding property tax amounts gives a more descriptive line.[3] The ratio values might be plotted along the Y or vertical axis and the property taxes along the X or horizontal axis. Then if the utility tax is regressive, using the property tax as a basis of comparison, the average relationship will be expressed by a falling line; if it is proportional, by a horizontal line; and if progressive, by a rising line.[4]

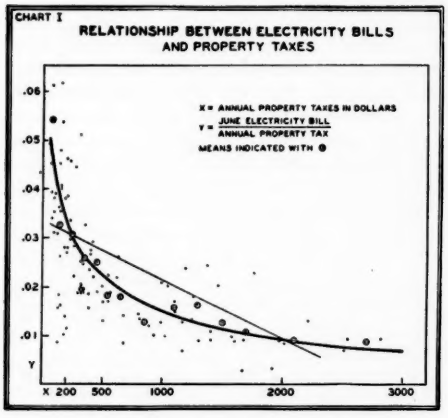
[2] Population, 13,000.

[3] If the electric bills were plotted on the vertical and the property taxes on the horizontal axis, the average line of relationship would, of course, be a rising one, for consumption does tend to rise as the size and value of a house increase. Whether taxing through a utility is a more or less regressive form of taxation than the property tax would not be clearly shown by this method for the line would rise in both instances.

[4] To illustrate: suppose a customer who pays $200 in annual taxes had a June electric bill of $6. The ratio of the bill to the tax would then be .03. If another customer paid $2000 in taxes and had an electric bill of $60, his ratio would likewise be .03. In other words, he would be paying electric bills in the same proportion as he paid property taxes and a line connecting these two points would be a horizontal one. If, however, the second customer paid an electric bill of $80, the ratio would be .04, a line expressing the relationship for the different customers would be a rising one and, as the customer with the greater amount of property would be paying for a greater proportionate amount for electricity, a tax system based on electric bills would be a progressive one. Finally, if the second customer paid only $40 for electricity, his ratio would be only .02; the line expressing the relationship would be a falling one and the tax would be regressive, for the man own-

(Footnote 4 continued on page 214)

Using this method the data were spotted on a graph with the annual taxes on the X axis and the ratio of the electric bill to the taxes on the Y axis. Four values occurring at both extremities of the graphed data were eliminated because of their non-typical deviation from the normal relationship. For the remaining 100 values two curves were drawn (Chart I). Because of space limita-



tions, two values at each extreme are not shown in order to give the rest in better detail. They were, however, used in making the computations which determined the lines. The straight line is fitted by the method of least squares and its equation is $Y = .0332 - .0000119X$. A similar computation using all values also gave a descending line, but the 100 points are considered as giving the more accurate results. The relationship is, however, clearly best described by a curve. So the arithmetical means of the values were computed for intervals of 100X for the first few hundred, where most of the values lay, and for larger intervals as the values became more scattered. The curved line was then drawn through these means, which can readily be seen as having only small deviations from the line. The closeness of the fit indicates that the sampling was reasonably accurate and that there is a definite relationship between the taxes paid and the electric bill.

The downward curve of the line indicates that a tax system based on electrical consumption is much more regressive than a general property tax. It bears especially heavily on the owners of small houses on which annual taxes are less than $200. In this group occur most of the consumers. Succeeding groups pay a smaller proportion and very low proportions are reached when one follows the curve to the largest houses. The scatter is also of some significance for it indicates that, even within the same tax groups, considerable variation may obtain in the amounts of electricity used and thus discrimination may result.

An indication that the value of a man's home, and therefore his property tax, is a fair measure of his income is given in a recent study, *America's Capacity to Consume*.[5] Expenditures on the home were found to be fairly constant throughout the income groups of non-farm families studied, with a tendency for the percentage to decrease as the income increases.[6] The item of expenditure on home includes more than that reflected in the property tax but it probably can be assumed that the various types of expenditures on the home are roughly proportional. We may then conclude that a tax which is regressive when compared with the property tax is at least as regressive when compared with income and is probably somewhat more so.

Although the study is, of course, limited because of the narrowness of the territory which was covered, it is not unlikely that the tendency found here is general in its application. This would be especially true among municipal plants, for most of these are in smaller cities where residential use predominates. Unless counterbalanced by a rate structure which brings the municipality a much higher rate of profit from

(*Footnote 4 continued from page 213*)

ing the smaller amount of property, as indicated by his tax bill, would be paying a proportionately larger amount.

[5] Levin, Moulton and Warburton, *America's Capacity to Consume* (Washington: Brookings Institution, 1934), p. 257.

[6] In his studies of expenditures of workingmen's families Ernst Engel found that the percentage of expenditure for housing was approximately constant. More recently, Berridge, Winslow and Flinn found a slightly decreasing percentage and Lough found a slightly increasing one. See Berridge, Winslow and Flinn, *Purchasing Power of the Consumer* (Chicago: A. W. Shaw Co., 1925), pp. 168-80, and Lough, William H., *High Level Consumption* (New York: McGraw-Hill, 1935), pp. 154-62.

large consumers, we might then assume that running a municipal utility for purposes of making a profit in order to reduce or eliminate property taxes is a regressive and generally undesirable form of taxation. Circumstances may alter decisions in specific cases but at least municipal officials should realize the regressiveness of the tax they are imposing when they set rates designed to produce profits and reduce other taxes.

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A Correction

MR. H. M. OLMSTED of New York, expert witness for the Louisiana Public Service Commission in *Louisiana Public Service Commission* v. *Southern Bell Telephone and Telegraph Company*,[1] has kindly called attention to an error in my statement in the February issue of the *Journal* concerning the amount of unused plant capacity allowed by the Commission in the rate-base as a reasonable margin of growth.[2]

The statement in question was: "Excess capacity of 18.1% was reduced 12.5 percentage points leaving 5.6% as a reasonable margin of growth." The facts out of which the issue arose before the Commission are as follows: The figure 18.1% represented the percentage decline in development from 87.5% on March 31, 1930, at the maximum point of utilization, to 71.7% on the date of appraisal, October 31, 1934. The decline thus amounted to 15.8 percentage points or 18.1% of 1930 development. Actual development of 71.1% on October 31, 1934 left a margin of 28.3%, but the Commission after considering the rate of station growth at that time and the probable effect of reduction in rates concluded that the margin remaining for growth would be 25% as an average for 1935. By allowing an "equal sharing of the burden of surplus growth" between the company and rate-payers, the margin actually allowed in the rate-base for further growth amounted to 12.5% instead of 5.6% as stated in the original article.

Mr. Olmsted states that the Louisiana Commission's deduction for unused plant capacity represents a "somewhat pioneering treatment" of this problem. This is very probably true so far as regulation of telephone companies is concerned. Yet the legal basis of the decision by the Louisiana Commission was in part a statement by the United States Supreme Court in *San Diego Land and Town Company* v. *Jasper* (189 U. S. 439 (1903)), involving irrigation rates and valuation in a situation where the plant represented capacity in excess of requirements at the time the proceeding was brought. The Court stated in that case: "If a plant is built, as probably this was, for a larger area than it finds itself able to supply, or, apart from that, if it does not, as yet, have the customers contemplated, neither justice nor the Constitution requires that, say, two-thirds of the contemplated number should pay a full return." The Louisiana Commission, therefore, was not as drastic in its decision as the law would seem to permit.

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[1] 8 P. U. R. (N. S.) 1 (1935).

[2] "Valuation and Rate-Making for Telephone Companies", 12 *Journal of Land & Public Utility Economics* 99 at 100 (February, 1936).

Book Review Department

Urban Land

Malcher, Fritz. THE STEADYFLOW TRAFFIC SYSTEM. *Cambridge: Harvard University Press, 1935. pp. ix, 91. $1.00.*

Highway engineers have made steady progress in adapting their work to the physical demands of the individual automobile —curves, gradients, materials, and the like. They, and the city planners, have perhaps reacted more slowly to the conditions imposed by the mass effect of the automobile; progressive stop-and-go systems and grade separations have only become common in recent years.

These were phases of the traffic problem which particularly interested the late Fritz Malcher, and his studies of them, published in article form, were pioneering work in the field. The directors of the Harvard School of City Planning have done well to collect this material into book form. They have done a first rate editorial job.

Current traffic practice does not seem to follow all of Malcher's ideas. Perhaps the most interesting part of the book is the final Chapter IV giving various specific applications to a number of types of street layouts and intersections. These show great flexibility and adaptability to the problem involved. Engineering departments with their too common tendency to stereotyped solutions could not do better than to make an intensive study of this portion of the book.

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Wright, Henry. REHOUSING URBAN AMERICA. *New York: Columbia University Press, pp. xiii, 168. $7.50.*

Mr. Lewis Mumford in his foreword to this book calls housing one of the most backward arts in America, thereby indicating the need for more of both the study and the action which have typified Henry Wright's work in housing.

With the appearance of so many publications on housing during the past few years one is likely to regard Mr. Wright's choice of title merely as an attempt to be different or as inference that former authors had already housed America and he is now going to rehouse it. That such is not the case is evident by his own words.

"We should appreciate the merit in thinking of the reorganization of the great blighted sections of our many substantial and geographically well located cities as doing service for healthy and permanent populations provided a way is found to rehabilitate such areas so as to be suitable for the conduct of happy lives, with the advantage of their convenience to the central work places and amusement centers of these cities. Also there will be necessity for the replacement of many of the thoughtlessly and shoddily built sections added during the past decade, which in many cases may be required to meet the needs of larger groups of the population with a less wasteful and more effective pattern than that which has heretofore been produced even with the benefit of zoning restrictions and land subdivision control.

"It is for such a large-scale rehabilitation that the technique here expounded is most applicable."

For the student of land economics one of the most striking truths developed in the book is the wastefulness and the physical undesirability inherent in the system of land use under which urban America has been housed. The effectiveness of the solution Henry Wright suggests for this unhappy predicament is not dependent upon any revolutionary change in our economic or social life, but rather upon a new approach whereby the dwelling unit itself will be greatly improved by treatment as an integrated part of a community. While recognizing that the government must assume greater responsibilities, especially in providing for the housing needs of the low-income groups, he deals with the techniques to be employed rather than the question of administrative policy. Permissive state and local legislation and cooperation instead of widespread public ownership are envisioned as the tools for land assembly and replanning.

While the advantages of community planning are clearly revealed, there is no suggestion that the problem of impossible land values or expensive building money can be overcome by even the most ingenious planning. Those who have been frightened away from large-scale housing during the past few years by fear that it was the brain child of a government monopoly under the direction of anarchistic professors may be somewhat reassured to note in Mr. Wright's

book both the historical development and the imminent necessity of a large-scale planning in housing, whether or not housing is a government function.

The technical analysis and detail presented in *Rehousing Urban America* are of unusual value because it is presented by a man who has gone from A to Z in the alphabet of housing theory and still realizes that families live in homes and not square feet. The book should enable non-technical readers to obtain a broad understanding of the type of analysis and design which will become increasingly important as this country moves from the oratorical to the actual stage in its housing program.

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Housing Officials

McNamara, Katherine. BIBLIOGRAPHY OF PLANNING, 1928-1935. *Cambridge: Harvard University Press, 1936. pp. viii, 232. $3.50.*

This latest addition to the Harvard City Planning Studies is "A Supplement to the Manual of Planning Information" published in 1928. It brings up to date the list of planning materials published since that time.

The presentation of the material follows the pattern established in the original Manual, thus making readily available the continuous picture of planning literature. The indexing system has, of course, been considerably expanded to take care of the recent extension and application of the planning principle to county, regional, state and national governmental units.

The book is a careful and thorough piece of bibliographical work, which fills an urgent need and will be an indispensable tool for students as well as practitioners in the planning field.

HELEN C. MONCHOW
Of the Journal Staff.

Land Resources

NATIONAL RESOURCES BOARD. Report, December 1, 1934. *Washington: Government Printing Office, 1934. pp. vii, 455. $3.25.*

The contents of this volume are divided into five parts comprising the findings and recommendations of the National Resources Board to the President, based upon reports to the Board from each of the four sections on Land Planning, Water Planning, Mineral Policy, and Surveys and Maps.

The Board sets forth reasons for and aims of resources planning and makes general recommendations as to policies and organization to accomplish these ends. To secure integrated control that avoids waste and insures more economic utilization of resources, it recommends continuous planning by an Advisory National Planning Board of five members appointed by the President to serve as a general staff for the Chief Executive. Other outstanding recommendations include: provision for permanent land and water planning committees; a permanent Public Works Administration supported by a series of advisory planning committees to prepare a long-range program of public works and cooperate with regional, state, and local planning boards; a financial balance sheet to be set up for the Federal Government and maintained by the Comptroller General, with provision for making available to federal agencies similar data for other governmental units; a scheme of collective organization of firms in each of the leading mining industries, federally supervised, to control capacity, production, stocks, and "sometimes prices" of mining products; a mid-decennial census of population and employment to be taken in 1935 and kept up to date; standard maps of the United States to be prepared and basic studies to be made relative to all types of resources.

Reports of the Land and Water Planning Committees and Mineral Policy Committee contain statements of basic principles of planning policy; an inventory of physical supplies and present uses of these resources to the extent data are available; treatment of maladjustments in uses of resources; and recommendations for corrective action. Perhaps the most specific program outlined in the entire *Report* is that of the Board of Surveys and Maps, advocating a 10-year program for mapping the United States at a cost of $117,531,000.

Significance must be attached to the *Report* as the first comprehensive attempt in the history of our National Government to collect data and formulate policies aimed at an integrated and coordinated program of economical use and control of our natural resources. More concretely, it evidences disapproval of the past record of almost unrestrained individualism in the exploitation of exhaustible resources.

The *Report* is not without definite defects and limitations. Much duplication is found in statements of principles, policies, and facts in the several reports—to some extent unavoidable because of the overlapping of the data treated. Policies are formulated only in broad outlines, partially as a result of inadequate data at this stage. Measurement is almost entirely in terms of physical units.

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Public Utilities

Fournier, Leslie T. RAILWAY NATIONALIZATION IN CANADA. *Toronto: The Macmillan Company of Canada Ltd., 1935. pp. ix, 353. $3.50.*

This excellent case study of experience with government operation of railways describes the antecedents and formation of the present Canadian National Railways system out of private and publicly owned lines, analyzes the financial and operating results of the system and its private competitor the Canadian Pacific, appraises the problems which have arisen out of the competition of the two rivals, and suggests, as the solution, amalgamation of railways in Canada.

The first seven chapters contain the best single description the reviewer has seen of the circumstances under which the present Canadian National system was created, and give ample evidence of the effects of extravagant, direct public construction and encouragement, by direct and indirect aid, of overbuilding of privately owned mileage.

Chapter VIII contains an analysis of Canadian railway operations for the period 1923 to 1933. This is the heart of the study, since it attempts to compare the operating results of the National with its private rival, and to draw conclusions with respect to the results of public as compared with private railway management. The author wisely recognizes the factors which put the Canadian National at a disadvantage, and his comparative analysis of traffic, revenues, and expenses leads him to the conclusion, soundly arrived at, that "the disparity between the unit costs of the two railways was greater than could fairly be explained by differences in their operating characteristics." (p. 177.) Also sound is the conclusion that "the Canadian National made the mistake of attempting to duplicate and even exceed the standards and services of its private competitor, without sufficient traffic to make that policy sound." (*Idem.*) However, the author's point that political influences on the Canadian National's administration were partially responsible for failure to control expenses and capital costs adequately is not clearly demonstrated.

Chapters IX and X present a comparative analysis of the capital expenditures of the rival lines for the period 1923-1931, and of the Canadian National's financial structure and condition. The reckless expansion program (particularly in passenger service), fostered by rivalry, aggravated the deficits of the National system and seriously weakened the financial condition of its more conservatively financed competitor. While the management of neither system could have been expected to foresee the decline in traffic resulting from the depression, the enormous growth of the debt of the National system precludes the possibility of any return on the public investment of 2¾ billions.

Chapter XI contains a description and critique of the Report of the Royal Commission on Transportation of 1932, the recommendations of which were incorporated into the Act (described in Chapter XII) passed in 1933.

Chapter XIII discusses the proposition of unified management as a substitute for mere cooperation, and analyzes the possible savings which might result from such a scheme. (Rejected though amalgamation was by the Royal Commission, Parliament, railway labor, and the Canadian public, it has been recommended by the management of the Canadian Pacific.) In Chapter XIV the author summarizes his preceding material, and concludes that "unified management of the two systems is a means whereby annual economies of fifty millions or more are possible. It is a logical solution of the railway problem, because it is the only proposal which offers the promise of adequate economies and because it would provide a sound basis for the future development of railway transportation in Canada." (p. 347.)

Only as individual case studies of this kind are accumulated can generalizations as

to the general proposition of government ownership and operation of railways be made. This study is in wholesome contrast to those hasty, biased, and unscientific statements and opinions too often encountered in discussions of the pros and cons of railway nationalization.

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Public Finance

Simpson, Herbert D. PURCHASING POWER AND PROSPERITY. *Chicago: Foundation Press, 1936. pp. ix, 149. $1.50.*

This is an attack upon the quite widely accepted theory that "huge public expenditures in themselves are a way to generate economic prosperity." The theory has as its objective the "creation of purchasing power." What is really needed is not new purchasing power but the release of that which already exists but has lost "exchangeability."

We have had, says the author, two huge experiments in the creation of mass purchasing power. One was our war and reconstruction loans to Europe; the other the spending program of the New Deal. Both have been conspicuous failures because they have not eliminated maladjustments and released purchasing power. They require constant repetition and are not self-sustaining. The public works program of John Maynard Keynes is open to precisely the same criticism.

Purchasing power is obstructed by disparities among the prices of different groups of commodities, disparities between incomes of various groups and the prices of commodities they buy, and disparities between prices and costs; by uncertainties which make hazardous, purchases in contemplation of the future; by frozen assets. "An asset that has lost its attribute of exchangeability in one form or another is frozen and in that metamorphosis it has ceased to be purchasing power."

By refusing to let the depression take its course we converted an acute illness into a chronic disease. It is the function of deflation to wipe out the obstacles to the free flow of purchasing power. Inflation may have a place but during a depression it will not "take hold"—it merely makes two idle dollars where there was one before.

The author's own program for restoring purchasing power and prosperity includes the following: abandonment of price-fixing and price-pegging policies; stabilization of the government's monetary, banking and public utility policies; a mortgage banking system; federal purchase of submarginal farm lands for conservation purposes; elimination of business racketeering; reciprocal tariff reduction; public employment (for relief of the unemployed but not to stimulate business). Borrowing on a large scale during a depression is warranted and it is not necessary or advisable to balance depression budgets.

The reviewer finds much in this book which he personally would question or with which he would take issue. For example, is there very much difference between giving the umemployed jobs in order to put them to work and doing the same thing in order to stimulate business? Just what expenditures of the New Deal are included in the program to increase purchasing power and how does one know so conclusively that the program, whatever it may be, is a conspicuous failure? Are there not maladjustments between spending and saving which the so-called natural remedies cannot correct and which public works might help to alleviate?

Nevertheless, these are merely matters of opinion and there can be no question that Professor Simpson has made a notable contribution in this well-reasoned analysis of the twilight zone between public and private finance. It is written in the author's usual clear and entertaining style and should be highly valuable both for the layman and the expert.

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Miscellaneous

Riddle, N. Gilbert. THE INVESTMENT POLICY OF TRUST INSTITUTIONS. *Chicago: Business Publications Co., 1934. pp. vii, 280. $4.00.*

The scope of Professor Riddle's book is well described by the author in the Preface: "This book first presents the financial importance of the personal trust business; second, it describes the machinery of trust investing; third, it sets forth some of the legal and economic problems of trust investing; and finally it presents a detailed picture of the investment policies, practices

and accomplishments of trust institutions for the period, 1919-1932." The major portion of the book deals with an examination and analysis of the investment experience of 196 testamentary trusts administered by 19 trust institutions located in New York City, Boston, Cleveland, Chicago, and St. Louis.

Real estate and real estate obligations at the time of inventory accounted for nearly 29% of the aggregate value of the trusts; real estate holdings alone represented 18%. It was the policy of the trust institutions to make gradual but continuous reductions in real estate holdings. This program, undoubtedly, was made necessary primarily because of legal restrictions against permanent investment in real estate. The policy also was probably followed to avoid management problems.

At the same time the institutions were reducing investments in real estate property, investments in real estate mortgages and bonds were being increased. Real estate obligations, of course, have been traditional mediums for trustee investments, and this class of investment qualifies as legal for trust funds in every state. It is, therefore, not surprising to find that the policy of trust institutions was to increase the proportion of funds invested in real estate bonds and mortgages. These increases were made during a period of exceptional flow of capital into urban real estate development; it was a period of real estate speculation and overbuilding. The record does not indicate that institutional investors generally attempted to restrict new commitments in this field. Although it is probably true that the real estate obligations selected by the institutions were, for the most part, superior in quality to those purchased by the general investing public, one is compelled to raise the question whether institutional investors can justify their competition for any but the highest grade risks under such conditions while ample investment opportunities existed in other fields.

The composite proportion of funds invested in public utility mortgage bonds showed a gradual but constant increase throughout the period; this is in direct contrast to the investment policy in regard to railroad bonds. At the close of 1932, holdings in public utility bonds represented over 8% of the total value of all trust investments; public utility preferred stock accounted for but 1%; and common stock approximately 5%. Utility bond holdings were second only to bonds of states and municipalities. That the proportion of funds invested in public utility mortgage issues was not higher was probably not attributable to lack of full appreciation upon the part of institutional investors of the favorable financial record of electric public utility operating companies.

During a large part of the period under review the industry was almost constantly in the capital market for new funds to finance plant expansion. It is somewhat surprising that institutional investors did not invest more heavily in the mortgage issues of desirable electric operating utilities during this period. Undoubtedly legal restrictions were partially responsible for lack of larger holdings. Archaic statutory requirements in many states have yet to recognize the satisfactory financial record and inherent stability of most electric utility undertakings. In a number of states the issues of many of the strongest companies are not legal for trust funds because of unnecessarily severe requirements in regard to franchises and earning ratios. The situation has not affected the ability of meritorious utility companies to obtain senior capital upon satisfactory terms; legal requirements have, however, restricted the number of utility issues available to many trustees.

Professor Riddle does not attempt to draw conclusions from his analysis of the way trust institutions have invested property, nor does he attempt to set forth what policies he believes they should follow. The material submitted is indicative of the policies and accomplishments of many of the largest trust institutions in the administration of testamentary trusts. The book should be of distinct interest to trust officers and students of investment.

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